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Sidney Marsden Fuerst, Editor

Geography Number

Prepared by

Clarence E. Meleney

New York, June, 1899

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. . . GEOGRAPHY . . .

JUNE, 1899.

The Educational Value of Geography.*

By Hon. William T. Harris, LL. D., United States Commissioner of Education.

THE leading branch of the seven liberal arts was grammar, being the first of the *Trivium* (grammar, rhetoric, and logic). Arithmetic, however, led the second division, the *Quadrivium* (arithmetic, geometry, music, and astronomy). We have glanced at the reasons for the place of grammar as leading the humane studies, as well as for the place of arithmetic as leading the nature studies. Following arithmetic, as the second study in importance among the branches that correlate man to nature, is geography. It is interesting to note that the old quadrivium of the Middle Ages included geography, under the title of geometry, as the branch following arithmetic in the enumeration; the subject-matter of the so-called "geometry" being chiefly an abridgment of Pliny's geography, to which were added a few definitions of geometric forms, something like the primary course in geometric solids in our elementary schools. So long as there has been elementary education there has been something of geography included. The Greek education laid stress on teaching the second book of Homer, containing the Catalogue of the Ships and a brief mention of the geography and history of all the Greek tribes that took part in the Trojan War. History remains unseparated from geography and geometry in the Middle Ages. Geography has preserved this comprehensiveness of meaning as a branch of the study in the elementary schools down to the present day. After arithmetic, which treats of the abstract or general conditions of material existence, comes geography with a practical study of man's material *habitat*, and its relations to him. It is not a simple science by itself, like botany, or geology, or astronomy, but a collection of sciences levied upon to describe the earth as the dwelling-place of man and to explain something of its more prominent features. About one-fourth of the material relates strictly to the geography, about one-half to the inhabitants, their manners, customs, institutions, industries, productions, and the remaining one-fourth to items drawn from the sciences of mineralogy, meteorology, botany, zoölogy, and astronomy. This predominance of the human feature in a study ostensibly relating to physical nature, your Committee considers necessary and entirely justifiable. The child commences

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* Extract from Report of the Committee of Fifteen used at the suggestion and with the consent of Dr. Harris.

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with what is nearest to his interests, and proceeds gradually toward what is remote and to be studied for its own sake. It is, therefore, a mistake to suppose that the first phase of geography presented to the child should be the process of continent formation. He must begin with the natural difference of climate, and lands, and waters, and obstacles that separate peoples, and study the methods by which man strives to equalize or overcome these differences by industry and commerce, to unite all places and all people, and make it possible for each to share in the productions of all. The industrial and commercial idea is, therefore, the first central idea in the study of geography in the elementary schools. It leads directly to the natural elements of difference in climate, soil, and productions, and also to those in race, religion, political status, and occupations of the inhabitants, with a view to explain the grounds and reasons for this counter-process of civilization which struggles to overcome the differences. Next comes the deeper inquiry into the process of continent formation, the physical struggle between the process of upheaving or upbuilding of continents and that of their obliteration by air and water; the explanation of the mountains, valleys, and plains, the islands, volcanic action, the winds, the rain-distribution. But the study of cities, their location, the purposes they serve as collecting, manufacturing, and distributing centres, leads most directly to the immediate purpose of geography in the elementary school. From this beginning, and holding to it as a permanent interest, the inquiry into causes and conditions proceeds concentrically to the sources of the raw materials, the methods of their production, and the climatic, geologic, and other reasons that explain their location and their growth.

In recent years, especially through the scientific study of physical geography, the processes that go to the formation of climate, soil, and general configuration of land masses have been accurately determined, and the methods of teaching so simplified that it is possible to lead out from the central idea mentioned to the physical explanations of the elements of geographical difference quite early in the course of study. Setting out from the idea of the use made of the earth by civilization, the pupil in the fifth and sixth years of his schooling (at the age of eleven or twelve) may extend his inquiries quite profitably as far as the physical explanations of land-shapes and climates. In the seventh and eighth year of school much more may be done in this direction. But it is believed that the distinctively human interest connected with geography in the first years of its study should not yield to the purely scientific one of physical processes until the pupil has taken up the study of history.

The educational value of geography, as it is and has been in elementary schools, is obviously very great. It makes possible something like accuracy in the picturing of distant places and events, and removes a large tract of mere superstition from the mind. In the days of newspaper reading one's stock of geographical information is in constant requisition. A war on the opposite side of the globe is followed with more interest in this year than a war near our own borders before the era of the telegraph. The general knowledge of the locations and boundaries of nations, of their status in civilization, and their natural advantages for contributing to the world market, is of great use to the citizen in forming correct ideas from his daily reading.

The educational value of geography is even more apparent if we admit the claims of those who argue that the present epoch is the beginning of an era in which public opinion is organized into a ruling force by the agency of periodicals and books. Certainly neither the newspaper nor the book can influence an illiterate people; they can do little to form opinions where the readers have no knowledge of geography.

As to the psychological value of geography little need be said. It exercises in manifold ways the memory of forms and the imagination; it brings into exercise the thinking power, in tracing back toward unity the various series of causes. What educative value there is in geology, meteorology, zoölogy, ethnology, economics, history, and politics is to be found in the more profound study of geography, and, to a proportionate extent, in the study of its merest elements.

There has been a vast improvement in the methods of instruction in this branch in recent years, due in large measure to the geographical societies of this and other countries. At first there prevailed what might be named sailor geography. The pupil was compelled to memorize all the capes and headlands, bays, harbors, mouths of rivers, islands, sounds and straits around the world. He enlivened this to some extent by brief mention of the curiosities and oddities in the way of cataracts, water gaps, caves, strange animals, public buildings, picturesque costumes, national exaggerations, and such matter as would furnish good themes for sailors' yarns. Little or nothing was taught to give unity to the isolated details furnished in endless number. It was an improvement on this when the method of memorizing capital cities and political boundaries succeeded. With this came the era of map drawing. The study of water sheds and commercial waters, of industrial productions, and centers of manufacture and commerce has been adopted in the better class of schools. Instruction in geography is growing better by the constant introduction of new devices to make plain and intelligible the determining influence of physical causes in producing the elements of difference and the counter-process of industry and commerce by which each difference is rendered of use to the whole world, and each locality made a participator in the productions of all.

The Primary Course Of Study.

By Clarence E. Meleney, Associate Superintendent, N. Y. City.

GEOGRAPHY does not appear as one of the subjects of the course of study for the first three years. The Nature Study group furnishes all the material on the physical side preliminary to geography under the titles: Natural Phenomena, Earth Study, Plants, and Animals. The human aspect is found under suggestions in the language work where the observations and experiences of children in every-day life furnish the material for the social element that touches the child in so many interesting and important points.

The study of primary geography is approached through the child's own experience and observation. In one sense every thing is geography, that is, the elements and phases of the large subject which he is to know as geography, have their beginning in the environment which at so many points touches his life. Physical geography embraces earth forms, water forms, the forces acting upon the earth and the relations of the earth to the system of which it is a small number. The child finds these elements in his nature study; the sun, the air, the water, the ground under his feet; the seasons, the changes of weather, etc. Political and industrial geography has to do with man's relation to man and to the earth and all its phases. Organizations of communities, and nations; the intercourse and dealings of people and of nations in the past, in the present, and the problems of the future are the great matters which are really to constitute a part of his living; it is, in fact, the study of how to live. This human aspect is, in its elements, close to the child's every-day life, is in fact a part of his life.

The beginnings of these subjects, therefore, cannot be shut out of the child's experience, whether or not they be subjects of a course of study for primary grades. There are then two sides to the subject of geography, the physical and the human; or, perhaps better, the material and the life sides. Each aspect has its importance and its interest to the child. In presenting these aspects the teacher wisely leads the child to think from the life side; it is the child's relation to the objects that constitute the way of approach. Experience has found that animate things first appeal to the interest of a child. The kittens, the puppies, the bunnies, the birdies;

their movements, their play, habits, and their traits of character are of peculiar interest; even before the kindergarten these are objects of study. The beautiful color, the growth, the culture of flowers, follow closely in interest. The sunshine, the rain, the snow flakes, the wind, the clouds, the stars, the moon, are all familiar and interesting before the child enters school. These all have life to him, because they possess force and motion, etc. From these beginnings are to grow the large subjects comprehended in geography.

But the human side comes still closer to his experience. He is a social being, has brothers, sisters, parents, teachers, relations, acquaintances. He comes in contact with the grocer, the shoemaker, the carpenter, the driver, the street cleaner, the policeman, the sailor, the soldier, etc. He begins to have dealings, to submit, to conform to rules governing the relations of people in a community. He sees all kinds of industry, traffic, occupation. In a great city these are closer to him than the physical, the nature aspect of the world. From these beginnings are to be enlarged and expanded all the activities of human society, which constitute still more of the great subjects of geography, history and civics.

With these elements in abundance every teacher has the material which is to form the foundation of instruction; this is the thought material upon which is based all the development of language, oral and written, all the reading matter used on blackboards in charts and primers, and all the drawing and making which is so valuable, an element in the course of training in any school of the present day. I say *all* advisedly, because even the myth, and story and fable, the beginning of that other knowledge centre, literature, are related intimately with the concrete things in nature and in society.

While all the subjects of the nature study group are included in the element of geography, the special subjects that lead up to it are under the titles "Natural Phenomena," and "Earth Study," and in the 3B Grade include the preliminary study of the Earth as a Globe; land masses, natural divisions of water, etc. The course is sufficient, definite and suggestive. For convenience the outlines for the third year are here quoted:

GRADE 3 A.—THIRD YEAR.—FIRST HALF.

Natural Phenomena: Cardinal Points. Observe sunrise and sunset, length of days; length and direction of shadows. Direction of winds, relation of winds to storms, development of storms.

Earth Study: Earth surface; plains, slopes, hills; drainage: surface water; rivers, ponds, lakes, shores and banks.

GRADE 3 B.—THIRD YEAR.—SECOND HALF.

Natural Phenomena: Continue observations each month, as in previous grade. Keep weather records. Study effects of heat and cold on water, and on plants, animals and man. Adaptation to climate.

Earth Study: Continuation of work of previous grade. Cultivation of soil; relation to plants. Relation of surface to plant growth. Study of topography and rocks of New York. The earth as a globe; land masses, natural divisions of land; natural divisions of water.

In each grade of the primary school it is well for the teacher to realize that instruction is the essential principle of the system. Subject matter is to be the basis of all the work; children are to be brought into contact with things. Each group of subjects starts from a centre, which is the child's present knowledge. In some grades and in some schools, owing to environment, these centres are very small, but around the facts that the child learns, related matter will grow and widen out. With the new objects and ideas come words to clothe the ideas, descriptive terms, etc. As the knowledge grows so the vocabulary grows. Reading matter on charts or in books increases with the growing ideas. But the teacher leads and the books contribute to the progress. Each teacher should be free to plan this expansion taking the course of study only as a guide; but it must be planned intelligently and progressively. There must be constant and systematic growth.

Not only are there reading books, regular and supplementary in abundance dealing with these subjects, but the teachers have found in poetry much that is helpful and delightful. It has been my good fortune to pick up in the schools many gems that are probably well known by many, if not all, of the readers of the Monograph. I give a few titles and authors from the many now common in our schools:

1. A Brook Song, by Eugene Field—

   "I'm hastening from the distant hills,
   With swift and noisy flowing,
   Nursed by a thousand tiny rills,
   I'm ever onward going, etc."
2. "The Hills," by Lucy Larcom.
3. "The Brook and the Wave,"—Longfellow.
4. "Which ever way the wind doth blow,
   Some heart is glad to have it so," etc.
   —Emilie Poulsson.
5. "Little white cloudlets up in the sky,
   Say, are you snowy ships sailing on high?" etc.
   —Mrs. Wilson's Reader.
6. "Snow Flakes."—Frank Dempster Sherman.
7. First Stanza of "Spring."—Longfellow.
8. Sixth and ninth stanzas of "Flowers."—Longfellow.

The following selections of literature used in connection with the Nature Study have been contributed by MISS JULIA M. GRIEBEL, teacher of the 3B Grade in School No. 143:

Quotations and other literature read to and studied by the children during the spring term of 1899:

I.—NATURAL PHENOMENA.

1. *Direction:*

"The Weathercock's Complaint." Poem read to children and found in Lovejoy's "Nature in Verse."

"The Great and Little Bears." Story told to children and found in M. Proctor's "Starland."

2. *The Wind:*

"What the Winds Bring." Poem learned by children. Written by E. C. Stedman.

Quotation learned—

> "Whichever way the wind doth blow,
> Some heart is glad to have it so:
> Then blow it east or blow it west,
> The wind that blows, that wind is best."—Selected.

"Aeolus, the Keeper of the Winds." Story read by children from "In Mythland," by Miss Beckwith.

Parts referring to the wind, in Longfellow's "Hiawatha," read to children.

"North Wind and the Ship." Story read by children and found in the "Cyr Third Reader."

"Mercury, the Wind-god." Story told to children, found in "Nature Study in the El. Schools," by Mrs. Wilson.

3. *Length of Shadow:*

"Shadow." Poem read to children, by R. L. Stevenson.

4. *Day and Night:*

"Apollo, the Sun-god."

"Aurora, the Goddess of Morning and Evening."

Stories told the children and found in "Round the Year in Myth and Song," by Florence Holbrook.

5. *Forms of Water:*

"The North Wind." Read to children, from E. Poulsson's "In the Child's World."

"A Million Little Diamonds." Song, sung by children, from "St. Nicholas' Songs."

'The First Snow-fall," by J. R. Lowell, Poem, learned by children.

"Jack Frost." Poem read to children and found in Lovejoy's "Nature in Verse."

Quotation learned—

Out of the bosom of the air,
    Out of the cloudfolds of her garments shaken,
Over the woodlands brown and bare,
    Over the harvest field forsaken.

        Silent and soft and slow,
        Descends the snow."—Longfellow.

II.—PLANT LIFE.

1. *Germination;*

"Treasure Boxes." Story read from "Stories Mother Nature Told Her Children."

Poem:

THE SEED.

As wonderful things are hidden away,
    In the heart of a little brown seed,
As ever were found in a fairy nut,
    Of which children sometime read.

Over the pretty shining coat,
    We sprinkle the earth so brown,
And the sunshine warms its bed,
    And the rain comes dropping down.

Patter, patter, the soft warm rain,
    Knocks at the tiny door,
And two little heads come peeping out,
    Like a story in fairy lore.

"Ceres and Proserpina." Read by children from "In Mythland," by Miss Beckwith.

2. *Pussy Willow:*

"Pussy Willow."
"Miss Willow."
Poems read, and found in Lovejoy's "Nature and Verse."

3. *Adder's Tongue or Dog's Tooth Violet:*
Quotation:

Only a bit of sunshine,
    Would you know from whence it came?
Dropped from the sky by angels,
    To be scattered in Love's sweet name.

"Good Morning, Sweet April." Poem learned by children, from Normal Music Course.

4. *Chestnut-Twig:*

"Baby Buds." Read to children, and found in E. Poulsson's "In the Child's World."

5. *Marsh Marigold:*
"A Laughing Chorus." Read from Lovejoy's "Nature in Verse."

6. *Jack-in-the-Pulpit:*

"Jack-in-the-Pulpit." Read to children, and found in "Whittier's Child Life."

7. *Trillium or Wake Robin:*

"Wake Robin." Story read by children, and found in "Monthly Magazine of History and Natural History," published by E. L. Kellogg & Co.

Legend of the painted trillium—

> Of all the birds the robin loved the trillium best. He used to hop around it and plume his feathers trilling his sweetest songs. One day he felt in a very playful mood. He came and hopped around the wake-robin and sang and chirped again and again.
>
> Then he said, "Oh, little flower, I am going to paint you like my breast. He plucked a feather from his red breast and painted the petals with it.
>
> When the flowers around saw it they smiled and said, "Oh, ho! sister wake-robin, you are trying to look like our proud cousin, the tulip."
>
> But the trillium did not answer. She was too happy to speak.
>
> Since then some trilliums have been called painted trilliums, because of the dainty red marks on their petals where the robin painted them.

8. *Dandelion:*

"To the Dandelion."
"Dear, Common Flower that Grow'st Beside the Way," etc. Quotation learned by children. Written by James R. Lowell.
"Dandelion-down." Story read by children, and found in "The Cyr Third Reader," written by Lucy Larcom.
"The Dandelion." Poem read to children, from McMurry's Classic Stories for Little Ones.

III.—Earth Study.

1. *Hill, Valley, Mountain:*

"Jeannette, the Little Swiss Girl." Story read and found in "The Seven Little Sisters."
"The King of the Golden River." Story read; written by John Ruskin.

2. *Clay:*

"Grandma Kaoline." Story told, and found in "Cat-tails and Other Tales," by Mary Howliston.

3. *Granite:*

"King Pluto." Story read, and found in "Round the World in Myth and Song."

4. *Drainage:*

"Neptune." Story told, and found in "Round the World in Myth and Song."

5. *Spring*, *Brook*, *River:*
"The River," by S. Goodrich. Lovejoy's "Nature in Verse."

Quotation—

> I saw a little streamlet flow,
> Adown a peaceful vale:
> A thread of silver soft and low,
> It wandered down the dale:
> Just to do good it seemed to move,
> Directed by the hand of love.

It is a cause of great satisfaction to the makers of the course of study that the principals and teachers have given such careful thought to this foundation work and have developed such beautiful results. It would be a pity to mar the spirit of a very liberal and intelligent interpretation of the course by specific and elaborate analysis and amplification.

The second article by Miss Wheaton which very closely interprets the course of study and relieves me of dealing with the work of these grades in detail.

Primary Geography.

By Margaret N. Wheaton, Instructor, School No. 151, N. Y. City.

THE method of teaching Primary Geography—that is, the geography which is essentially the work of the first three years of the Elementary School—is neither an evolution nor an outgrowth of some time-worn method, but a distinct result of our modern theories of education. While advances were being made all along the line of educational thought—while methods of teaching the school arts, each the most approved, arose, held sway and fell, the subject of geography remained comparatively undisturbed.

That study which is so closely related to nature as to be practically one with it—the one subject of the curriculum in which the teacher could leave the beaten highways of custom and make new paths for herself—has been for years taught by the dry-as-dust method of mere fact acquirement.

But, at last, the children themselves have led us to view geography in its proper light and true valuation. Their never-ending childish "Why?" which ever since there have been children has greeted the soft blanket of snow, the rainbow-scarf of Deity, the mysterious drifting fog, the falling raindrop, the shining sun, the moon and twinkling stars—the wonderful everyday phenomena which surround even the poorest city child is to-day being answered intelligently and systematically in the classrooms of the Primary School.

Through this study of nature and environment the more formal geography of the later years will become intelligible, hence interesting and profitable.

In the new Course of Study the work moves forward on two closely interrelated lines—Natural Phenomena and Earth Study, the end aimed at not being to make a child master of a few isolated facts, but to lead him through close observation (keynote of all primary geography) and under skillful guidance to rightly interpret the world, physical and social, immediately about him, and through this interpretation to realize that the whole great world is but his small one "writ large."

Impossible as it is in the classroom to separate Natural Phenomena from Earth Study, for the purpose of elucidation they will n this paper be considered separately.

NATURAL PHENOMENA.

1B.—The work begins in Grade 1B with little informal talks about the wind, sun, rain and snow. There is no attempt at didactic, arbitrary teaching, but the children learn that they owe the slowly opening leaf bud to the sun, that the wind is a worker as well as well as a playfellow, and that the tiny snow crystals and falling raindrops have each their part to fulfill in Nature's wise plan.

2A.—Grade 2A is a natural consequence of the work of 1B, a step forward, though still on ground partially covered in the preceding grade. The various forms of water are more thoroughly discussed, and the attention drawn to the sky with its ever changing fleecy clouds, shining stars, and magic Iris-arch uniting the smiles and tears of an April day.

The observation of the changes in the weather required in this grade becomes the starting point for the consideration of Temperature in Grade 2B.

2B.—This is a distinct advance, as it opens up the whole question of seasons and climatic conditions. Out of the simple talks on thermometrical changes, and the preparations made by animals and plants, under the children's own observation, to meet these changes, arises the vast subject of Man's and Nature's provision for the preservation and perpetuation of life.

The study of economics begins right here, though the children may never throughout their life hear the term used, for the industrial and commercial interests of the world hinge largely on this question.

3A.—In Grade 3A the work grows slightly more exact and scientific, though only an elaboration of 1B.

The sun, day, wind and rain are still the topics, but their relationships are more closely defined.

The necessity of definite terms of direction in describing the position of the sun and direction of shadows gives rise to the teaching of the cardinal points. The direction of shadows leads to the observation of the position of the sun during the day, and this, together with the consideration of the varying length of days, becomes the beginning of mathematical geography, without its lengthy explanations and unmeaning terminology.

Winds and their direction become most interesting and attractive when a whole class is eager to tell which way the school flag floated or the smoke from a nearby factory chimney blew, while the amount of attention boys will bestow upon a veering weather-vane is a subject for congratulation or despair according to the mental attitude of the teacher.

In the relation of winds to storms nothing need be taught which does not come directly under the observation of the children ; the east-wind with its storm, the west wind with its sunshine, are as fixed and immutable as the multiplication tables, and like them can be illustrated concretely. The great law of cause and effect is plainly demonstrated here.

3B.—As with the other grades, 3B simply supplements and enlarges upon the preceding work, differing with it only in degree, not kind. The weather records which were kept in 1B appear in 3B, only a little more fully and scientifically kept; the great question of temperature of 2A broadens out in this grade to the consideration of cold and heat on life in lands more remote; how Man and Nature adapt themselves to climatic conditions, whether it be in the Land of the Midnight Sun or under the Southern Cross.

In the whole course from 1B to 3B nothing has been presented which is beyond the comprehension of the average child. Much of the work would seem to be useless because of its apparent triteness; only the primary teacher aware of how little her children know can appreciate the necessity and value of this work.

EARTH STUDY.

2B.—This begins in Grade 2B, and, like the study of Natural Phenomena, is a basic study—physical conditions and forces must always influence life, and their study must be one of the foundation stones of any good educational system.

The close dependence of plant, and therefore animal life upon the soil, naturally leads to a study of its composition, hence the work in Earth Study begins with the observation of such forms of earth rocks as can be brought under direct notice. To attempt to be scientific here is to be unintelligible; it is not so much what sand, clay and loam are as it is their use as component parts of the soil; the end to be attained is not to simply recognize sand, clay or loam as such, but the ability to speak intelligently, of sandy, clayey or loam soil.

To accomplish this, specimens must be brought into the classroom where they may not only be seen but handled. The procuring of these specimens should not be a difficult matter in a city constantly being torn up as is ours.

The action of water on streets and soil is within the observation of every child; the least intelligent will be able to tell how the water washes the dirt down the paved streets and carves a little channel for itself through the mud of the unpaved ones, carrying with it the soil which is deposited on the more level portions of ground.

Having thus in this grade studied something of the soil formation in Grade 3A the earth surface as it is found in plain, slope and hill is taken up. On Manhattan Island, at least, the most logical because the most familiar one to consider first is the slope. Our streets all have a slight decline to assist surface drainage, and in every locality there is some place which the children all consider best for sliding and sleigh-riding. With these facts to start with the development of slopes, their varying lengths and steepness becomes an easy matter.

Hill and plain are more difficult to present concretely, but the Park, for those who can go there, contains all these forms, their expression in sand, clay and drawing is within the reach of all and with pictures, a most invaluable aid, a clear concept may be gained.

Again, in the study of surface waters the children may find every form around them. The overflowing gutter, where the boys sail their miniature ships, is only a small river; a slight depression in the pavement stops the rushing water and a pond is formed; a lake is but that pond enlarged with tiny streams trickling to and from it for inlet and outlet.

By so making the *most* of the forms the children see about them, by supplementing these with pictures and every mode of expression, sand, clay, drawing, the children will grasp these elemental geographical facts of earth surface and surface waters with their relationship and the set definition can be left for later years to crystallize.

3B.—On the work of the two preceding grades is based that of 3B, but as in the case of the Natural Phenomena for this grade it admits of a broader interpretation.

For the proper understanding of how the soil is cultivated the planting of seeds in the class-room is the best plan; here the children can observe for themselves the preparation necessary to ensure growth. To this may be added a great deal of outside knowledge which has been gained by children who may have seen this work done in the country or in the small garden patches which still here and there dot the city.

In the relation of the soil to plants much will depend upon the quality of the work done in 2B. Certain plants need certain soils and here the teacher must be ready to supplement the city child's necessarily limited knowledge.

The relationship of surface to plant growth follows logically the work of 2B and 3A. Through the simple class-room experiments of planting seeds in different kinds of soil, the noting of the action of water on soil and the study of earth forms and surface waters, the children are now ready to deduce for themselves the main facts of their relationship.

These are that plant life is dependent upon rich soil; that this soil has been washed down mountain and hill slopes by the action of water; that this washing away of the soil leaves the slopes rocky and unable to support plant life, except as found in hardy varieties of trees; that even these disappear on the steepest slopes leaving only the bowlders; that consequently level land is the most fertile and easily cultivated.

This subject can be indefinitely enlarged upon and yet kept strictly within the limits of primary geography if the wide awake teacher will with the aid of pictures and stories transport her class to the broad wheat fields of the West, the pine covered hills of Maine, or the long sandy reaches of our coast, and make evident the close dependence of occupation upon physical conditions.

From this it is but a step into the great world of commercial and industrial interests.

In the study of the topography of New York there is little to be said beyond the fact that the island extends north and south and that there is a central rocky ridge sloping east, west and south. To the children living on the higher portions of the city this can be made clear by occular demonstration; for the thousands who live in the downtown districts where commercial interests have wiped out all traces of natural land formation this must be largely a matter of belief; for both there are the sand table and clay molding board.

In the study of the rocks of New York it was not intended to make incipient geologists of the children, nor to confine them to just those rocks which might be considered local. That they should know something of the stones they walk over and grow familiar with those they see in daily use, as building material, is all that is meant.

In this, as in all the rest of Earth Study, the wise teacher will make the most of the immediate surroundings—locality influencing her as to what she should teach more than desire to complete her grade.

The little world about the children has been rather thoroughly discussed; they have dealt throughout the course with such land and water as they are familiar with; now the earth, as a whole, is taken up, but only the broadest details are considered.

The natural divisions of land and water, the continents, mountain systems, valleys, oceans and bays, types of which have been found in the home surroundings are now discussed in reference to their relationship on the globe.

The idea of size, always vague in a child, is with the question of the earth's spheroidal shape, perhaps the most difficult point to make clear.

In reference to the former, all that can be done is to tell the number of days it takes to cross the ocean or continent in its swiftest ocean greyhound or limited express.

As to the earth's rotundity, the simple arbitrary statement that it *is* round is the safest for the primary teacher, leaving the proofs for more advanced work, experience having proven to one teacher, at least, that children, despite explanations, secretly believe that the earth is flat and that somewhere there is a "jumping off" place.

This, then, is what is meant by Primary Geography. First, the world about the child, then the world beyond him, natural phenomena linked inseparably with life—human, animal and plant.

Unconsciously many kindred subjects have been touched upon; the key to social conditions and problems has been placed in the child's hands; interest has been aroused, and it remains for the grammar teacher to see that the labor of her primary sister shall not have been in vain.

I have purposely refrained throughout this article from using that greatly overworked word "correlation;" but to the teacher anxious to make her work permanent, as well as interesting, let me say that no surer way of so doing can be found than to unite with this subject all the history, literature and mythology she, without overcrowding the child, can utilize.

The topography of New York will mean more to the boys when they know that a battle was fought on Harlem Heights; selections from Shelley's "Cloud" will do more to fix the endless circle of changing water forms than hours of explanation; Stevenson's "My Shadow" is worth a dozen text books on the subject, while Tennyson's musical "Brook" will go on singing its lesson long after the teacher has been forgotten.

It is this weaving of beautiful thoughts and expressions into the study of elementary geography that will give it a color and make it a pleasure for teacher and taught.

Home Geography.*

By William M. Davis, Professor of Geography, Harvard University.

THE study of home geography does not find its chief recommendation in the local information that it provides, but rather in the aid that it furnishes through local examples to the general study of geography, by giving full meaning and reality to geographical facts and relationships the world over. The reason for this is that geography as a whole is hardly more than a compilation of innumerable local or home geographies. However the home geographies of different places may vary, the distant ones can always be better appreciated if the local one is consciously observed and understood as a member of the class to which it belongs.

There are certain important principles that the teacher should bear in mind during the process of local study. Geography teaches us about the way that people live on the earth—this being a rough conversational definition of this subject, sufficing to embody in elementary form "the study of the earth in relation to man." Geography is therefore concerned with two classes of facts and with the relations in which the two classes stand. The first class embraces all necessary facts about the inorganic earth—land, water, air—and about plants and animals considered as the non-human inhabitants of the earth; the second includes the necessary facts as to the manner of man's living, from the savage to the civilized state, from wandering nomads to fixed populations, from the thieving of warfare to the competition of trade. It is only as the facts that constitute these two classes come to be understood that their relationships can be studied; and this matter of relationship then becomes the very soul of geography. The items of geographical text-books are then not merely so many absolute, empirical statements; they are examples of the relationship established in a certain region between man and his natural environment.

Actual examples of geographical facts and relationships are to be seen on every hand. No teacher need be entirely dependent upon a text-book. When geographical facts are taught from text-book alone they are bereft of their natural foundation and fail to develop

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that interest in the child that should be aroused and that can be aroused if geography is based on personal observation.

A few suggestions follow as to what can be done in this way in an excursion covering a hill and a valley with a brook or river. In such an excursion are included many facts that deserve observational study through a large educational range, from elementary grades to the university. At first, a simple statement of directly observed facts suffices. But very soon, the nature of the facts will be better appreciated if their fuller meaning, their physiographic life is pointed out. Thus a brook comes to be recognized as a stream of water, fed directly or indirectly by rainfall, and bearing the waste of the land towards the sea. The soil on the valley slopes is rock-waste, a result of weathering and not yet washed away. The continuation of the activities that are associated with and may be studied near the brook must produce certain slow changes in the form of the valley; and it is by the long continuation of such activities in the past that the present form of the valley has been produced. With progressive weathering and washing on the two slopes of a hill, it must in time dwindle away; and the same processes acting through the past have carved the hill into its existing form. Thus not only the facts, but the nature and meaning of the facts become clear and vivid.

The features of a coast line may be treated in the same way. A part of the line may be traced and its peculiarities noted; thus the simple facts become clear. But very soon, the coast line should be treated in its true physiographic relations. It is the line where the sea borders on the land; and this line has been determined in the first place by such elevation or depression as the land has last suffered, whereby the waters came to lie upon it at a certain level, thus giving the initial shore line a certain form; second, by the activities of rivers and the sea-waves, tides, currents—which have brought about certain changes whereby the initial shore line has become the actual shore line. The ease or difficulty of understanding the present shore form is partly determined by the nature of the local example studied, but more largely by the knowledge or the lack of it on the part of the teacher.

The phenomena of the weather serve admirably to develop the habit of observation, yielding a large return in facts of importance, many of which are susceptible of simple explanation, and thus it is not to the rivers and ocean alone that we must turn for observational study of geographic facts. The geographical portion of the study of animals and plants also presents interesting examples of similar healthful exercises in geography, but the limits of space forbid their consideration at this time.

It will be noticed that in the paragraphs dealing with rivers and coast lines, something of explanation is introduced. This I hold to strongly, as introducing the rational element into geography, and thus invoking the understanding to aid the memory. It is not merely for the sake of knowing how hills and valleys are made that the problem of weathering and washing is discussed; it is discussed because the facts concerning the hills and valleys of to-day, at home and abroad, can be much better appreciated if one understands how the hills and valleys have originated. There can be no question of the truth of this principle; hence I would urge on every teacher the importance of not only leading pupils to observe accessible facts, but of leading them quickly and easily to perceive the meaning of the facts observed. And with this brief consideration of the first class of geographical facts, let us turn to the second.

A village is an admirable subject for observation of human conditions. Notice the increasing closeness of the houses towards the center, around the stores and offices; note the larger open spaces about the border of the village. See how the roads converge towards it from the surrounding country. Consider the traffic on the roads, inward and outward. All of this should be taken, not merely as local fact, but as an example of a way in which some of the people of a certain country in the world live. After direct observation, comes simple explanation. The post office is near the center of the village, because it there best serves general convenience. A single road leads out for a mile and then forks into two; because it is cheaper to reach two districts in this way than by two independent roads. Some of the villagers work in shops, others are employed in a bank, or at a railroad station; thus diversity of occupation is first observed, then accounted for. The growth of the village may be explained, story-fashion. Then, like the hill, it is seen to have a life-history.

It is sometimes said that in the schools of large cities, observational study is impossible; but this is a serious mistake. It arises from the failure to perceive that a city belongs in one of the most important sub-classes of geographical facts. Consider, for example, what may be seen on a single street. It is paved and curbed; it is lighted, watered and drained; houses are built closely along it, and they vary in size, construction and use. Remark the activities of the street; the various stream of people, passing this way and that, crowding the sidewalks at certain hours, deserting them at others. Observe the traffic in wagons, the passengers in cars. Here is fact in abundance. This all exhibits the way in which people live in certain places, called cities, where for some reason many thousands are crowded on a small area. Why are they thus crowded? Why are some cities or villages larger or smaller than others? Is this particular city larger now than it used to be? Through these observations and questions, the human element of geographical study is promptly brought forward, as it should be.

It is not only through the principle of likeness that home facts are useful in describing distant facts; the principle of contrast is no less helpful and important. The children of a city school may learn not only about other cities by comparison, but they may learn about smaller gatherings of population, as in villages; they may even expand their parks into a useful understanding of fields and forests by playing variations on dimensions. An excursion over a hill or across a valley may be extended to a great variety of lessons, about mountains or plains, large rivers and small, fertile regions and deserts. A winter cold snap illustrates the climate of the frigid zone ; a summer hot spell exemplifies that of the torrid zone. A drought serves as a sample of an arid climate ; a period of heavy rain introduces stories of the excessive rainfall of the equatorial belt.

In all this extension of the local to the remote, I would urge teachers not to be too logical. Some hesitate to mention Africa until Africa has been "studied." This is too formal. Surely, no good narrator would, before telling a story to children out of school, ask if they had studied about the continent where the story is located ; he might however wisely select for his scene an understudied region, and thus make way for it. Here, as in certain other cases, the teacher may often in school imitate to advantage the informal methods that prevail out of school.

Finally, as more and more individual examples of the two fundamental classes of geographical facts accumulate, bring them into their relation. The site of a village has meaning in it ; it is a consequence of some natural factors of form, or group of forms. In one case a village lies on an upland so as to be away from the steep-sided, narrow ravines that dissect a plateau ; in another a village lies on a valley floor, because the hills are too high and too isolated to serve as convenient centers of populaton. Certain parts of a coast line are very thinly inhabited ; these generally offer poor opportunity of embarking or coming ashore. Between many miles of such coast a natural harbor may determine the location of a large city. Roads and railroads, fields and forests, farming and manufacturing all respond to geographical environment. From beginning to end, from the simplest and most apparent examples of relationships ready at hand for every teacher, to those most involved examples which the professional geographer is trying to clear up, the relation of man to the earth is a most alluring study. The attentive cultivation of home geography, taking advantage of the many examples of the two classes of geographical facts that are spread about us, affords a natural, observational, rational basis on which the larger aspects of the study may be securely founded.

Inductive Method In Geography.

By Mary E. Kelton, Teacher of Geography, Adelphi Academy, Brooklyn.

IT is the aim of this work to awaken an interest in home geography and to train in map study and map reading, thereby furnishing the child with material and method through which he may gain for himself an idea of distant parts of the world.

The plan is based upon the Froebelian principle, "Learn to do by doing." For this reason text-books, containing geographical information are not given to the child until the later part of the work.

The lessons in the first two years are rather upon nature study than geography. This instruction furnishes material upon which is based the true geography teaching which begins in the third year.

The child creates a text for himself by associating the ideas he has gained from home geography with those furnished in maps and plates. To do this he must have maps showing temperature, winds, rainfall, vegetation, commercial and industrial conditions and density of population as well as surface features. The book that seems best to meet these requirements is Longman's School Atlas. Accordingly each child has the atlas and with it works out the geographical story.

Observations upon natural phenomena are made and recorded in each grade. These vary from the simple record of sunshine and cloud, rain and wind in the first grade, to the more difficult observations where the use of the thermometer, barometer, and rain-gauge is taught. The simple reading of the weather map is given in the fourth year and its symbols are used in recording the daily observations. The shadow-stick aids in teaching latitude. The record shows the shortening and lengthening of the shadow-line and aids in fixing attention upon our relation to the sun during different seasons.

The shadow-line is marked at each hour during the school day. Thus we note the gradual decrease of the shadow-line until noon and the lengthining of the shadow-line in the afternoon. The shortest line is our meridian, and from this we mark on the floor of the school-room the true north and south line. As in one day, we find our shadow-line shortest when the sun is highest in the sky, so our year's record of the noon shadow-line proves that when the line is longest in December the temperature is lower than in June when the line is shortest, and we find our noon sun in December far in the south, while in June it seems more nearly overhead.

As the work progresses latitude is taught. Then the records of the shadow-line is recalled in considering the relation to the sun of more remote regions of the earth. In June, the people in Sitka see the sun as we saw it in March.

The temperature is recorded each hour during the school day to indicate the time of increase and decrease as well as the daily range. The highest daily temperature is reached at two o'clock, and a lower temperature is not often noted until later in the afternoon.

From this fact we are able to understand why the highest seasonal temperature is in July rather than in June when the noon sunshine is longest and strongest. The average is recorded in daily record. The monthly average is kept for reference.

October's record gives an average of 50°. Referring to the Atlas, the child finds that in San Francisco, the January temperature is like that of October in New York, and that in Sitka, July is not warmer than our October.

Our record shows that ice forms at about 30°. From the map the child finds rivers and lakes where there may be skating in winter; rivers that are blocked with ice, etc.

The map shows an annual range of temperature in New York of about 40°. This difference in temperature demands a change in clothing, from wool to cotton. Other localities, where range is similar are named from map, also places having greater or less range. Conditions in each place are discussed from the standpoint of conditions in New York. As for example:

The following is copied from the note-book of a little girl in the Third grade.

Isotherms for January.

Temp.	Countries.	Cities.	Surface.
0°	Greenland	Fort Yukon	high
	Baffin Land		low
	Labrador		high
	N. Canada		low
	Alaska		high
30°	Newfoundland	St. Johns	low
40°	United States	New York	low
50°	So. " "	New Orleans	high & low
70°	Cuba	Santiago	low
	Central America.		high

Isotherms for July.

Temp.	Countries.	Cities.	Surface.
40°	Greenland		high
	Baffin Land		
	N. Canada		
70°	Canada	Vancouver	high
	United States	New York	low
	United States	Chicago	low
80°	United States	New Orleans	low
	N. Florida		low

The range of temperature between January and July is 40° in New York. In San Francisco only 10°, and in New Orleans 30°.

New Orleans and Florida have a hot summer and a mild winter. Ft. Yukon and Sitka have cool summers and cold winters.

In New York the winter clothing is much heavier than summer clothing.

The St. Lawrence and Hudson rivers have ice houses on their banks.

The conditions in each zone are fairly represented in New York at some time during the year, and our records are presented from time to time as the topics demand.

The rain-gauge helps us to understand the meaning of the rainfall map. Amount of moisture is reckoned as more or less than that of New York.

These observations are enlarged and strengthened by the class excursion which we make an important phase of our instruction. Each of the first four grades in our school have had this year trips into the country. On these walks the different points shown in the daily record have been brought up. Our relation to the sun is compared with that recorded on a previous trip. The wind, cloud and temperature are noted. The soil and vegetation are considered with reference to the regions we have visited, on the map.

Special topics are considered on each trip; for instance: The fourth grade was taken to Sheepshead Bay to consider the conditions that are characteristic of much of the Atlantic coast. Here we find the sandbars, lagoons, and tidal marsh. The buildings on Manhattan Beach, and the bicycle road shows the utility of the sandy beaches and the way in which the marsh lands may be reclaimed. Following this trip a map lesson was given on the United States map. Lists were prepared of the cities having neighboring beaches and of states having swamp-lands or lagoons.

Washington Park, near which our school is situated, furnishes ideas of surface features and elevation. When these points have been discussed the state map of New York is given and the contour lines explained. The children draw the hills in contour. After this the meaning of the colors in the physical maps is taught. As we have in New York only lowlands, this is given first. Localities having similar conditions are found and named. The trips mentioned are easily made and others that have been taken are not difficult. From eighteen to twenty children are taken by two teachers, and the excursion is a pleasure to both children and teachers.

In our plan, the daily record of natural phenomena is kept in each grade. The excursions have been a feature in each of the first four years.

The special work in the third grade is upon the continent of North America. The Atlas is first given to the children in this grade. The meaning of the plates showing temperature and vegetation is explained by means of the recorded results of observations made during the year. In the time of studying zones we are governed by the season in New York. We try to teach the tundra region while the children are familiar with the thaw that follows the snow and frost. Conditions of plant and animal life are explained by conditions of same during our extreme cold. Specimens of lichens found growing on fence rails and tree trunks during our January were presented as possible plants of the cold regions. From these, ideas of reindeer moss and other lichens were gained. The thick coats on the horses in our winter helped us to infer the warm covering on the animals of the arctic region. Specimens of seal skin were examined to prove the truth of the inference.

Papers illustrating the region are prepared by pupils from the maps. The following paragraph is copied from the note-book of one of the children:

"The tundra consists of mosses, lichens and small shrubs. The tundra of North America borders the Arctic Ocean. Northern Alaska and Northern Canada are in this region. The mouth of the Mackenzie River is in the tundra region. In January the temperature is 20° below zero. In July it is about 40°. Less than ten people to the square mile live in this region. They belong to the Eskimo race."

Discussion upon these papers follows in class. Reading lessons upon the same region, from geographical text-books, prepare for the lesson in English. Standard selections from any book suitable to the grade and relating to the subject are chosen. The White Seal, from First Jungle Book, was an illustration of life in the tundra region. Thus the geography lesson furnishes ideas for a written story that is the work in the English class.

Globe lessons, showing relation of North America to other parts of the world, follow in this grade.

In the fourth year the United States is the topic during two-thirds of the time. The latter work is given to a deductive study of South America, based upon ideas gained in previous work.

The United States is first considered in regions. Crops and products with special conditions of each are next studied. Commercial relations of regions follow and finally the grouping of states.

In this year home work is expected. The atlas is the only book used in this preparation. By means of its plates and maps the pupil gains for himself the ideas of the region under consideration. Question blanks, with atlas references, are printed on the mimeograph. Each child fills in his blank during his home study. The discussion in class is based upon these papers. The following are examples of the question blanks:

The italicised words indicate the blank form; the filling in in these cases is by pupils of grade 4.

Name, Henrietta Pealto. *Date*, Jan. 18, 1899.

GREAT BASIN.

Map 11—Latitude, 32–42 north. .... *Longitude*, 112–120 west.

STATES.	*CITIES.*
1.—Utah	Salt Lake City.
2.—Nevada	Virginia City.
3.—California	Carson City.

Plateau on southeast, Colorado Plateau.
Mountains in Nevada, Humboldt Mountains.
Mountains on eastern border, Wasatch Mountains,
Mountains on western border, Sierra Nevada.

Sinks and Lakes,	*River.*	*State containing sink or lake.*
1.—Humboldt Sink	Humboldt	Nevada.
2.—Great Salt Lake	Bear	Utah.
3.—Sevier Lake	Sevier	Nevada.
4.—San Felipe		California.

DESERTS.	*STATE.*
1.—Ralston Desert	Nevada.
2.—Mohave Desert	California.

VALLEY BETWEEN DESERTS.

Death Valley, 225 *feet below sea level.*
Map 15—Rainfall, 8 *inches per year.*
Map 7—Vegetation, Treeless country.
Map 17—Products, Gold and Silver.

STATE OF CALIFORNIA.

Map 11.—Latitude, 32-42 .... *Longitude,* 114-124.
Map 4—Temperature, Jan....... { larger part, 40-50; southeast, 50 } *July,* { West, 60. East, 70. }
Map 15—Rainfall.... { *Northwest,* 68 *inches per year.* *Southeast,* 8 " " *Center,* 20 " " }
Vegetation, Map 7. *West,* Carifers. *East,* isolated trees.
Map 3—Season of most rain, winter. .... *Southeast,* Deserts.
Map 14—Rock formation.................. Volcanic.
Map 7—Northern limit of Vine Culture. Latitude 32½-42.
Surface Features—Mountains and Valleys, Mohave desert in Southeast.
Mountain Ranges. 1—Coast Range, *Mountain peaks.* 2—Sierra Nevada.
Elevation. { 1—Mt. Shasta, 14,500 ft. 2—Mt. Whitney, 15,000 ft. 3—Mt. Lassen, 10,500 ft. }
Mountain Passes. 1—Tejon Pass .... 5,350 ft. above sea level.
2—San Gorgonio Pass .... 2,600 " " "
3—Truckee Pass .... 7,200 " " "

Valleys.	*Drainage.* *River.*	*Tributaries.*
1—Death Valley	Sacramento.	Pitt River.
2—San Felipe Sink	San Joaquin	Merced River.
3—Yosemite Valley	Merced River	

Can you tell from Map 15, which river has deep water? Sacramento River.
Cities.—Central port for Pacific Shipping? Map 17. San Francisco.

Coast Towns.
1—San Diego.
2—Wilmington.
3—San Francisco.
4—Santa Barbara.
5—San Jose.
6—New Almaden.

River Towns.
1—Sacramento.
2—Marysville.

Inland Towns.
1—Los Angeles.
2—Stockton.
3—San Jose.

Canal Terminus.
Stockton.

Map 9 and 11.

So. Pacific R. R. Terminus.
San Diego.

Union Pacific R. R.
San Francisco.

R. R. Junction.
San Francisco.

The following blank is used for home study of

PACIFIC STATES.

If you travel by rail from New York to Seattle by way of Canada, what large cities do you pass? Map.
At what cities do you cross bridges?
What great lakes do you see?
What are the materials shipped from each city?
What mountain pass do you cross?
In what provinces will you see great farms?
In what province will you pass through forests?
In what province may you meet gold miners?
What occupations are found in Seattle?
What occupations are found in Portland?
In what cities of California may flour mills be found?
In what cities are raisins and oranges packed for shipping?
With what foreign countries does San Francisco trade? Map 17.
In what cities may you find invalids?

The life of the region under consideration is further treated in the reading lesson. Articles from standard authors and newspaper clippings furnish material here, such as selections from Evangeline, illustrating Nova Scotia and the Mississippi basin; from Hiawatha to supplement the study of the St. Lawrence basin. The Youth's Companion classic series furnish much useful information and supplement Carpenter's North America, the text book used in the fourth grade.

The Teacher of English carries on the work in the reproduction story. The following story is copied by a child in the fourth grade from his note book *verbatim et literatim.*

(The note books contain only the original work of the pupil.)

"COLORADO PLATEAU."

The Colorado Plateau is south of the Great Basin. The Colorado River has some deep canyons. The great canyon is the largest canyon of them all. The black canyon is so called beoause the stones are black.

Arizona is in this region. It has a hot summer and has very little rain.

The mountains have snow on their tops and so rivers will flow into the Colorado River. This river is a swift flowing river and is still wearing away the rocks. Colorado is a good name for it because the rocks are colored. Indians once lived there. We know they onced lived there because they have left ruins of their homes.

May 25, 1899. "C. ALLEN SCHWARZWAELDER."

Geography note-books consist of text that the pupil has perpared in the lesson in English—that consists of constructing sentences from the blanks that have been filled in for the Geography home work. Sometimes a story is written from topics suggested by the geography teacher. The following is copied from 4th Grade note book:

"STATE OF CALIFORNIA.

The State of California extends through ten degrees of latitude and is rather narrow for its length. The vegetation in the north is mostly of conifers and in the south, tropical plants.

It is very dry in southeast California but there is a great deal of rain in the northwest. The season of most rain is winter. The mountain ranges are the Sierra Nevada and Coast Range. The highest peaks are Mt. Whitney, Mt. Shasta and Mt. Lassen.

California, Yosemite and Death Valley are the valleys and are drained by the Sacramento, San Joaquin and the Merced. Death Valley is a sink.

The products of California Valley are fruits, tobacco and corn. The southern products are grapes and oranges.

The railroads are the Southern Pacific and Union Pacific.

"May 25, 1899." "NATALIE GOUBERT.

The commercial side is taught by grouping of cities and products. Lists of harbors on Atlantic coast are made. The commercial map in atlas furnishes ideas for lists of products to be found on the docks of each city. In a similar grouping the river towns and conditions of life are associated in lists in this manner.

After our country has thus been treated in a general way, we have material for building up conditions in typical states. About these the other states of the section are grouped. After the connected and systematic study of our own country we are prepared for the deductive work upon South America.

The latitude furnishes basis for deduction upon temperature. The map will give the chief highland areas. The wind chart indicates the prevailing winds. With a temperature, surface and wind conditions the pupils deduce the facts concerning distribution of moisture. All these deductions are confirmed by means of plates and charts in the atlas. With the idea of climate thus gained a fairly correct statement of vegetation regions can be made. The atlas plate on vegetation tests the correctness of deductions.

The study is still further advanced by deducing facts relating to crops and animal life. These facts are based upon ideas obtained regarding vegetation and temperature.

The distribution of the crops is given by comparative work upon regions of North America. The reading lesson supplements this atlas work with facts concerning man and his relation to the region in which he lives. Types of plants and animals peculiar to this region are also considered.

The home lesson is still given in the form of blanks to be filled in from atlas as was the case in the study of United States. In these lessons the prominent surface features are named and located. The different regions are classified as to climate and distribution of life. The countries and commercial interests of each are grouped according to facts gained from atlas.

With the temperature plates the seasons are compared with those in northern hemisphere. The idea of slight yearly range of temperature in tropical regions is noted. The annual range of temperature in cities of South America is compared with that of cities in similar latitude in North America.

The work in the upper grades is carried on in a similar manner.

Text books are in the hands of the pupils in these grades. The facts of the text supplement the atlas with which the pupil has grown familiar in the preceding years.

Special attention is here given to the effect of geographical environment upon the life and history of man. The geography lesson is enlarged by the history reading which is carried on in a line with the geographical study of regions.

This course of study has been successfully carried out during the past three years. It has been found to create interest and enthusiasm that is often lacking when the geographical text-book is placed too early in the hands of young children and the memory alone employed. We use the atlas and the text-book as sources from which selected facts are taken. The interest is aroused in the collation of the facts, is intensified by their discussion in the classroom, and finds its satisfaction in the written expression of the results.

The work is intended to be inductive, logical, systematic scientific and the method is vindicated by the results, which are measured by interest, enthusiasm and well ordered knowledge, together with definite habits of observation, investigation, recording and expression.

Methods Of Teaching Local Geography In The City History Club.

FRANK BERGEN KELLEY, A. M., PH. D., Normal Teacher of the City History Club of New York

ONE not familiar with the methods of the City History Club might suppose that the members of its classes are engaged solely in the study of local history, but there are two other subjects which occupy a large space in the curriculum, viz. Civics and Geography.

Carlyle said "never read any such book" (meaning history) "without a map beside you; endeavor to seek out every place the author names, and get a clear idea of the ground you are on; without this you can never understand him, much less remember him. Mark the dates of the chief events and epochs; write them; get them fixed in your memory—*chronology* and *geography* are the two lamps of history."

How many historical facts are brought vividly before us as we study a map of northeastern New York with its lakes George and Champlain, forts Crown Point and Ticonderoga, causing us to recall the gallant Frenchmen who, with their dusky allies, strove, at first with much show of success, to wrest the Empire State from their English rivals.

So the battles of Long Island and Harlem Heights are much better understood by the student who walks over the site of these struggles or who works out their situations with historical charts.

Both of these methods are pursued by the teachers of the City History Club. Three large outline maps have been prepared for classroom use, No. 1, called "New Netherland," embraces the states of New York, western Massachusetts and Connecticut, New Jersey, Delaware and Maryland. With this map before them, scholars are taught the relations to New York of the Factory of New England, the Farm of New York and the Northwest, the Fields (coal and iron) of Pennsylvania and the Fleet of merchantmen entering the harbor. The waterways contributing to New York's commercial greatness, the Bay, Long Island sound and the Hudson, are pointed out in connection with the Erie canal, the Great lakes, the Hudson and Champlain canal and the artificial waterways joining the Delaware with the seaboard. The railroad trunk lines are also shown, as well as the chief telegraph, telephone and ocean cable routes. Physical and Political Geography are made graphic by crayon or watercolor representations illustrating the surface, boundary lines, etc., and colored stars are placed to indicate historic sites.

No. II includes Greater New York and vicinity. On this are shown the five Boroughs and the boundaries of the metropolis; the avenues of approach by water; the bay, Staten Island, Kills, the Hudson and the Sound; the chief islands, waterways, streams, heights and swamps; the shoals, lighthouses and defences of the harbor, and the relations of the cities of New Jersey and Westchester to the metropolis. The market gardens of Long Island, the dairy farms of Westchester, the orchards of New Jersey and the fishing grounds and oyster beds of the Bay are indicated as adjacent sources of food supply. The termini of railroad and steamship lines and canals are denoted by coloredlines or crosses. The origin of geographical names is studied in this connection and the location of the old Dutch settlements on Long, Staten and Manhattan Islands are pointed out in order to show the evolution of the City of New York from the days of New Amsterdam. Another lesson, more in the line of civics, explains the uses of the various islands by the city, state and nation.

No. III is a map of the Island of Manhattan on a large scale, outlining the shores, East River Islands and southwest corner of the Bronx, and showing Broadway, the Bowery, Third Avenue and the chief crosstown streets of the city as well as the larger parks. In addition, teachers show some of the heights and now hidden waterways, the elevated and surface railway lines, termini of ferries, steamship lines and bridges, together with the most prominent municipal and other public buildings, shopping districts, etc.

With smaller children their own homes are located, thus causing them to grasp something definite as to the relations of those homes to the rest of the city. For that purpose are secured City Assembly District maps (published for the Bureau of Elections by Martin B. Brown, 49 Park place, at ten cents each) and special study is made of the block on which the school is located and of the immediate surroundings. Thus relative distances are taught practically and the terms "east side," "west side," "uptown," "downtown" are thoroughly explained.

The following is part of the syllabus of the Normal Lesson for Club teachers on the Geography of Greater New York.

References.—Hinsdale's "How to study and teach History," chaps. viii, x, xiv. Parker's "How to Study Geography." Wilson's "Memorial History of New York," vol iv, ch. 19. "Topography of New York City." Physical Map of New York City in

Johnston's "Campaigns of 1776 around New York and Brooklyn," in vol. iii Memoirs Long Island Society. Appleton's illustrated "Dictionary of New York and Vicinity." "New York City,"* Mrs. Westover Alden.

Excursions.—To Staten Island or on any one of the longer ferries. To one of the parks where physical features can be studied. On one of the elevated railroad lines to its terminus.

LESSON OUTLINE.

General.—Physical causes contributing to the greatness of New York City: climate, proximity to Europe and to center of population in U. S., harbor, water connection with the interior, immediate environment.

Particular.—Area 360 sq. mi., length 31 mi., dock capacity 559 mi., population 3,500,000, position of Columbia University 40°, 45', 23" North Latitude, 4 hr., 55 min. 53.6 sec. West of Greenwich. (See also *World* Almanac.)

Locate boroughs, counties, chief islands, waters, parks, streets, bridges, railroads, forts and districts still known by local names. Take pupils on an imaginary trip about the metropolis, locating all points of prominence.

SUGGESTIVE QUESTIONS.

1. What are some of the disadvantages of the shape of Manhattan?
2. Why are the down town streets so narrow and crooked and those above 155th St. so irregular?
3. Why are Philadelphia streets so regular and why was Washington laid out as it is?
4. Why and how have lands been reclaimed from the rivers?
5. Explain the terms "uptown," "east side," direction of avenues and streets, relative sizes and distances apart and the system of numbering houses.

SIDE TOPICS.

Defences of New York; adaptability of harbor approaches; location of forts, quarantine and lighthouses; necessity of preparing for war in time of peace. Historical allusions, showing how the geographical situation of New York has affected its history, Verazzano, Hudson, the fur trade, relation with Iroquois and the French, the capture of New York in the Revolution, the "scares" in 1812, 1861 and 1898.

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* Historic and Picturesque.

POLITICAL DIVISIONS.

Boundaries of Boroughs, Counties, Wards, Legislative Districts (Congressional, State, Senate, State Assembly and Aldermanic and City Council). (Minor districts reserved until lesson on Government).

Changes in corporate limits since 1600:—

Early—below Wall Street.

1653—1st Dutch Charter, Island of Manhattan.

1873—Part of Westchester added.

1895— " " "

1898—Richmond, Brooklyn and Queens added.

The Study Of A Continent.

With Special Reference To 4B Grade In New York City.

By Alexis Everett Frye.

NOTHING in geography stands alone; everything has relation or setting. The climate, life, commerce, history, of North America have for a setting the entire world—the winds, oceans, latitude, foreign people, work, products, etc. This is doubtless the main reason why the course of study for Grade 4 includes the world and continents in general, leading to the special study of North America. Let us look back from our continent to see what precedes; then let us look forward to see where the work is to lead.

We will stand on this principle: *Teach nothing without a purpose.* It is our purpose to present North America in its world relations. Broadly speaking, they are simple as regards primary work, yet these simple relations form the very basis of the higher study. The continent has size and position relative to other lands and seas; the world-study shows what they are. It varies in climate north and south; the globe tells why. Its western highland is part of a greater world highland; the globe shows this fact.

Here, then, we have the key to our world-study: It includes the form and size of the earth; the simple plan of heating in belts; the trade winds of the hot belt, and the westerly winds of the cooler belts; the chain of highlands forming the backbone of the lands, with wide slopes on the Atlantic side, and less wide slopes on the other; the belts of plants; the natural regions of animals; stories of people of different color, habits, etc. Now, if we glance back over this last sentence we shall see that while it outlines the simple world study, it also gives a setting to each of the continents and lays a basis for the special study of each in its relations to the whole,—each is set in the world relief, in belts of heat and winds, in belts of plant life, etc. This is the purpose. The work is so simple, so primary, that most of the time of Grade 4A may well be spent on the "Home Geography" outlined in the course of study.

Coming to Grade 4B, the "Continents in General" form the first topic. We have viewed the world as a unit and are now ready to study in detail its larger parts. The natural line of work seems to be to give pupils some notion as to what these large parts are, how they are separated, and particularly *such details as they possess in common.* The *special details* belong to the later study of the individual continents.

Basing the work on that which has gone before, we find that the lands of the world are surrounded by water; that the water cuts through the world highland in one place (Bering strait) and almost cuts across in two other places (Panama and Suez)—also that there are many large islands in the sea; the great masses of land thus wholly or nearly separated by the sea may be studied singly as continents and islands. The globe-study shows also that from the great body of water round the south pole, long arms reach out between the continents; different names are given to these arms or oceans, as well as to the continents and islands, and both the lands and the seas may be studied *on a globe* with reference to their relative positions, sizes and forms. Little globe-maps, like the cut used herewith, may prove helpful, but globes are better.

Pupils have learned the simple plan of the world relief—the great highland chain, with its slopes to the sea. They may now observe which portion of this relief is in each continent, and also whether the wide slope is broken by lesser highlands such as the Appalachians, though the names of the lesser highlands need not be required at present. This work should be very simple, taking only one or two lessons.

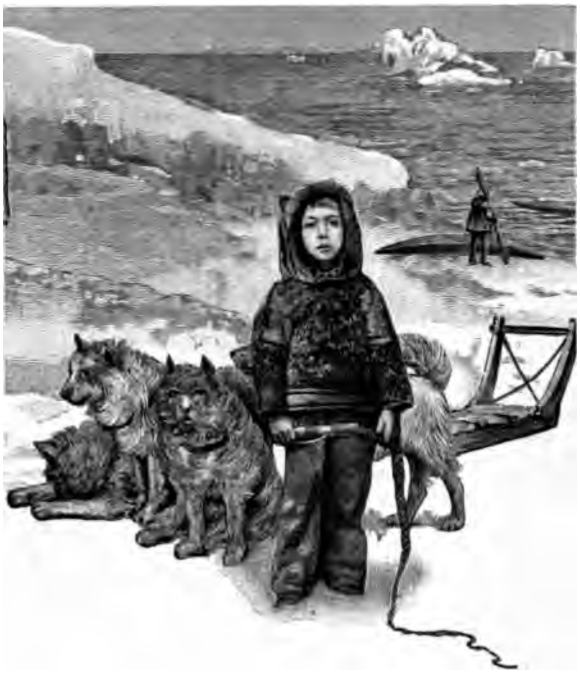
The rest of the *general* continent study may take the form of review of the work of Grade 4A, leading pupils to read from a globe or from globe-maps simple facts in regard to the various continents, whether they are wholly or partly in the hot belt, with its steady winds from the east, or in the cooler belts having most of their winds from the west, or even in the very cold regions near the poles. Pupils can also state in general whether the products belong to the hot belt or to the cooler belts. Stories of people of the various races clothe the continents with interest.

When the above work has been done, the study of the individual continent follows naturally. Which shall come first? South America is simplest in outline, surface, drainage, and in other respects, but North America is our home continent. Some teachers prefer to begin with one, some with the other, and it is hard to say which is the better plan. The New York course of study calls for the home continent first.

In beginning the study of North America, this question confronts us, where must the work lead us? The answer is clear. It must lead to the rational knowledge of how the land is fitted to be the home of man. The word *rational* suggests reasoning, that there is a series of relations, and of course every geographer recognizes the simple series leading from the study of natural regions, through climate and products, to man and his works or history. Herein we discern a principle to guide the selection of subject matter and the order of its use. Choose such facts as form links in this geographic chain, such topics as lay the basis for higher work; present each topic when it is needed in preparation for a higher step. Memory comes from the linking of ideas; reason forges the strongest chain; linked facts give understanding; thus understanding aids the memory. Isolated facts are mental barnacles.

In the books on geography we have pictures, maps and text. How may each be used? Fully as careful study should be made of the pictures as of the text or maps. Doubtless most teachers will agree that we get a fuller, richer knowledge of descriptive geography from pictures than from text. For example, does our knowledge of the Arctic lands, seas, climate and life come chiefly from written words or from pictures? When we think of the cold, do we not recall pictures of frozen seas, ships in ice, Eskimos in furs, etc.? When we recall the Eskimos themselves and their mode of life, do we rely more on the text read or on pictures seen? Of course, both have helped, but which the more? Turning from descriptive geography to the study of cause and effect, the *text* grows in importance, if it has a full background of observation, experience and experiment. Of course, in the study of *where*, maps take the leading role.

One picture may serve for many different lessons. This little cut of the Eskimo boy would prove helpful whether the topic were Arctic seas, Arctic life or Arctic climate. Will the reader kindly give a moment to the simple picture and see how it fairly bristles with climate? See its ice, the shaggy dogs, the boy's furs; the dogs drag, not a cart, but a sled; a thick coat for the boy does not suffice, but a hood covers his head; the floating blocks of ice suggest that masses of great thickness must break from the lands; indeed, climate seems to be the *motif*.



Have we exhausted the little picture? Approach it now from the standpoint of the Arctic people, let the Eskimo boy be the central figure, and at once the scene changes. How does he keep warm? Where does he find food and material for clothing? Of what use are the dogs to him? Of what and how does he make his sled? In other words, how does he fit himself to his surroundings? Later this very picture may help in the study of the polar seas, or in the study of animal life in these cold regions. In the latter instance, witness the boy's coat and hood, his whip or lash, the harness, the kayak, and note how they point towards the Eskimo's best friend, the seal.

Not all pictures are to be studied in one manner, of course. Some may form the basis of oral or written language lessons; others may best be studied by drawing or modeling. In the oral lesson the picture not only quickens the minds to see, but also quickens it to receive and retain related facts from the rich storehouse of the teacher. As years roll by, pictures will gain a higher and higher place in all text-books of geography.

Second in value among the materials for teaching geography are maps. These may be studied like pictures. The purpose is, not alone to gain knowledge of the world's chief features and the location of places, but also to gain *power to read maps*,—that is, skill in getting thoughts from maps. As with a picture, so with a map,—the pupil gains the most power to interpret, not by the leading strings of map questions, but by walking—creeping, if need be—alone, or sustained and encouraged in difficult places, by the helping hand of the teacher. There is no need of a map question except when interest lags, or when the teacher wishes some particular bit of information to be gained; the latter is not the general but the specific case.

For example, we may choose a lesson on the surface or relief of North America. Let us place before the class a relief map, such as may be found in most text-books. Our question may be simply, "What does the map show about the surface of our continent?" What is the object of the question? It is to lead pupils to read from the maps the general arrangement of the surface features. Let each mind work in its own natural way. Of course, the answers will be rambling, and we are glad of it, for they show individual thought. One pupil tells of the high mountains in the west; another, of the ragged shore line; others of the great central plain, or the large lakes, or the directions of large rivers, or the low eastern highland, etc. Views may differ, but the writer prefers not to have the natural features of the map obscured by names printed on the map, for the pupils soon locate *mere names*, without looking closely to the forms. If we would teach them to read maps, let us lead them to interpret the map characters,—to read a river, not in the words Mississippi river, but in the map sign which indicates the length and direction of the stream; to read a mountain chain, not in the words "Rocky mountains." but in the lights and shades that make the surface look rugged. On another map near at hand, the pupil should be able to find readily special names *when* they are needed.

Now, the pictures should be ready for use. If the pupil speaks of the great range along the eastern border of the Western highland, the teacher can clinch the discovery by saying, "This is a picture of part of that mountain chain." The pupil tells of a certain lake; the teacher adds, "That is the Great Salt lake, and here is a picture of one part of its shore." With the picture in hand, the teacher also tells some interesting or important fact about each feature, thus making the map *real*. The pupils soon become very eager to find other features, hoping that the teacher will have corresponding pictures to show. Are map studies a bugbear to pupils? Not when they are led to read the map for themselves and to see pictures of the features they discover.

After the pupils have seen in a general way the principal features, the teacher may direct to more specific work by saying, for example, "What else does the map show about the Western highland?"

Thus narrowing the field of study, teachers can lead to as close a classification of features as is desirable. The map studies in text-books may serve for review or as an aid in leading pupils to associate names with places. Most of the important names will, however, be given by the teacher in connection with the first lessons in map reading.

Drawing is a natural means of leading the pupils to study outlines of maps, just as modeling is a natural means of guiding them to the study of surface forms. The purpose of the drawing, for example, is to lead pupils to see the features that broadly influence the higher study of geography,—to see the general directions of the coast lines of the continent, *because* of the influence over climate, commerce, etc.; to see the large bays and peninsulas that affect the climate of important natural regions ; to see the principal commercial bays and harbors.

Here, as in all the other parts of the work, *have a purpose ;* we may omit the thousand and one details of coastline that have little if any influence over the life of a continent. The maps of continents in all text-books are so highly generalized that, although the general contours are correct, *not a single detail is or can be correctly represented*, owing to the small size of the maps. A straight line or a simple curve on such a map generally takes the place of a thousand details on a chart of the Coast Survey. Why should the minds of children be clogged with details of coastlines, which are not copies of nature, and which have no bearing on the higher work in geography? Does it not seem better to be guided by some such principle as this: "Lead pupils to draw only such large general features of coastline as affect climate, the distribution of plants and animals in regions, or the location of commercial or historical centers?"

In these drawings, the only construction lines needed are such as the pupils *discover* for themselves, in the relative directions of coastlines. Perhaps the first lesson or two on each continent may consist in sketching three or four straight lines that show the general directions of the coasts. Each pupil should judge for himself these directions, because the very object of the work is to lead him to see. Once the general directions are fixed in mind, the few important bays and peninsulas can be included. Details can be added as they are needed.

The text should be handled in the same broad way as the pictures and maps. It was a blessed day for children when teachers of geography and history turned away in disgust from the narrow fretful method of calling for answers to the puttering questions printed at the foot of each lesson of text, and set the minds free to grapple with broad topics. That simple change in method of teaching affects far more widely the future of our country than can the annexation of all the islands taken from Spain in 1898. Perhaps it will not be out of place to summarize a few plans for topical study. Thus, pupils may be told (1) to learn what a lesson tells about each of two or three topics ; (2) to re-write the lesson in their own words ; (3) to write questions which will bring out the various thoughts of the text ; (4) to originate a list of two or three topics covering the lesson. The recitations of course may be greatly varied. Pupils may discuss the topics, or write about them, or tell what they consider the most important facts of the lesson, or ask each other questions bearing on the text, or be prepared to answer broad questions asked by the teacher, etc.

It is beyond the limits of a brief article to discuss very fully the selection of subject matter bearing on a continent. During the last quarter century the teaching of geography has gone forward with rapid strides. This is chiefly the result of the development of the science itself. Are we wrong in saying that fulness of knowledge has more to do with good teaching of geography than has any amount of method study, valuable as the latter is? A few years ago we were content to teach a plain as a tract of land nearly level. To-day we know that such a statement looks simply to the surface form of the land, and in itself has much less bearing on life, commerce or history, than has the study of the origin and age of forms. In our own country we find examples of all types of plains that show the close relation between the *origin of the land* and the resulting life therein. Thus, along the South Atlantic and Gulf coasts we find vast areas that were once sandy or muddy sea-bottoms ; we look in vain for hard building stone or for mines of iron, gold, copper or other metals ; yet pottery clay and glass sand abound, while fertile marls are plentiful ; the soils vary with the parts of the former sea-bottoms, and also with the periods of time that the soils have been exposed to the weather, thus giving one belt for rice, another for pine forests, another for cotton, etc.; the inner edge of this plain marks the fall or power line in the rivers. The life hinges on the kind of plain, depending on its origin.

Turning to the region of the Columbia river we find immense plains formed of lava that has flowed from fissures, then cooled and hardened; the lava supports little more than sage-brush on the upland levels. Again, we look over the broad fertile wheat fields of the Red River valley in North Dakota, and cross to the Manitoba plains further north; these plains had their origin under an ancient lake, and the fine soil is lake mud just suited to the growth of grain. So we might visit the rice swamps in the great delta plains, or the fertile meadow lands made by flooded rivers, and we should see that the life on each kind of plain is closely related to the origin of the land. A plain, therefore, is no longer merely level land; the geography of to-day looks below the surface and traces the land from its origin to its product, showing the relations between them.

What is true of plains is also true of the other principal forms of land. The life upon them is due chiefly to their origin and climatic setting. This study of origins of land-forms bears strongly on the higher work, not alone in geograhy, but also in history and literature. It is this kind of work which characterizes the so-called "new geography." The first or primary steps are very simple, yet they lead into fertile fields of study. Without attempting to outline the work bearing on our continent, the above example may serve to indicate the nature of the work at present being done by many strong teachers.

As each natural region is studied in a simple way, it is given its place in the belts of heat and winds (or rainfall); pictures of its people, plants, animals, scenery, etc., are shown; the *reasons* for the location of important cities are discussed; samples of some of its common products are used as a basis for language lessons. In all this work our own country should receive a very large share of attention. Simple sketch maps may be made, showing the principal areas producing cotton, wheat, corn, forests, beef cattle, coal, iron, gold and silver,—the chief products used at home or shipped abroad.

Not only may we study the general distribution of people in races over the continent, but coming to our own country we may learn who the early inhabitants were, what white people came as colonists, how slavery was introduced, how the colonies grew to states, what parts of our country are now settled chiefly by farmers, by miners, by manufacturers, etc. This work lays a broad basis for the later study of the states or groups of states; in fact it is an excellent plan to locate the states in the various producing regions as studied. Then the later study of states will deal with fuller details.

The question is often asked, "Which is the more important, physical or political geography?" If by "political" geography is meant the study of cities and countries independent of their natural surroundings, without showing the reasons for their growth or location, it would seem as if such study belonged to the schools of a century ago, and not to these closing years of our century. If, on the other hand, we recognize that natural surroundings must be studied in order to give intelligent knowledge, then the question is best answered by saying that we would weave together the physical and political geography, and that neither by itself is worthy of a place in the lower grades of our schools.

It may not be amiss to offer one illustration along this line. Take the group of cities growing up on the Great Lakes. Some of the isolated facts that might be *told* about them are as follows:—They ship great quantities of grain and meat; they have iron foundries and furniture factories; both their railroad and their lake trade is very large; iron ore is shipped to them. On the other hand let us first study the natural regions that surround and support these cities. Let us look to the prairies, with their grain and cattle; to the soft-wood forests round the upper lakes; to the hard-wood forests of the states south of the Great Lakes; to the lakes themselves, with their connections eastward along the Erie canal or down the St. Lawrence; look also to the coal, oil and gas fields of the states south of the lakes; consider the needs of the farmers, ranchmen, miners, lumbermen, sailors, railroad men, etc., and we have the key to the growth not only of the lake cities, but also of the great states themselves. A pupil can readily see that with iron ore cheaply carried on the lakes, and with plenty of coal in the northern Appalachians and the Ohio valley, the cities would be likely to manufacture such iron articles as are needed by the classes of people named above; that the iron and hard-wood might be used in making agricultural implements for the farms; that oil would be refined where it could be cheaply freighted; that the farms would call for great quantities of lumber and furniture; that the lakes would offer the cheapest freight route eastward towards the great centers of population and also towards the seaports trading with Europe; that therefore grain and meat would be shipped from the lake ports; that all parts of the prairies must be reached by railroads, to gather up the products, and that most of these roads must run to the lake and river ports;—in other words, the simple physical geograhy *lays a basis for the facts* that often pass under the title of political geograhy; the two branches together should bear the name of *Geography*.

Our subject would perhaps not seem complete without some reference to the word "correlation," which has as many meanings as there are people who use it. Without entering into any lengthy discussion, the writer would state that he has not the slighest leaning towards the party that would try to make geography the sun round which all other studies should revolve like satellites, or the one study in which all others should be taught incidentally. While the common school branches have much in common, each in turn except such as are mere modes of expression, seems to call for considertion as a center of study. A common school course may well have *shifting centers of thought* or study,—now arithmetic, now geography, now history, etc.,—each carried forward in a natural or scientific way. At the same time we must seek to strengthen each of the studies by drawing from the others related matter. Suppose that for a particular hour the pupils have geography for the central study; if any historical reference will help the *geography*, bring it in; if any arithmetical problem in longitude and time will help the *geography*, perform it; if pupils can learn the geography lesson best by drawing, then by all means let them draw; if illustrations are needed from botany, zoology, astronomy, or any other study under the sun, let us have them, when they will help our central study of *geography*. At another time, when the central study is arithmetic, let us draw from every source tending to help the arithmetic. That is, while studies that are merely modes of expression may be very largely taught incidentally, the knowledge or culture studies seem to require individual treatment to secure natural development. Briefly stated, the principle seems to be this:—Using the various subjects as successive centers of study, group around each all that can be drawn from the others bearing directly on the central subject of study.

The thought of *correlation* is beautiful, if we take the word to mean *making studies bear together*, or *using facts from one study to throw light on another*. The writer prefers merely to suggest that teachers continue the good old practice,—in fact, expand it,—of taking helpful illustrations from all studies bearing on the geography lessons.

History is doubtless the subject most closely related to geography. These two studies must go hand in hand,—the one now the center of study, now the other,—yet with each receiving its orderly development. The study of the two subjects in this manner will more than double the value of the work. This is evidently the purpose of the parallel historical readings suggested in the New York course of study.

A Word To Teachers.

By Mary Cate Smith,

Author of "Life in Asia," "Round the World with the Poets," etc.

THE Indian boy, brought from his wild life on the reservation to the school at Carlisle or Hampton, takes the first opportunity to climb a neighboring hill, or it may be the tower of the school chapel. From this vantage point he "gets his bearings" and never afterward can he be confused as to the location of places in that vicinity.

The teachers in the school could show him the points of the compass and give him ever so elaborate an explanation of his surroundings, but the knowledge of location which he gains in his own untutored way is more real than any learned of schools. It is the difference between the real and the artificial, and in its attainment the boy has acquired *more* than knowledge; he has gained power.

It has seemed to me that many a teacher of geography needs to do with purpose and forethought what this Indian boy has done from instinct.

He needs to get above his surroundings to where he can sweep the whole horizon of his work and so gain a real knowledge of its meaning and scope.

With this thought in mind, I wish to urge a broader, deeper and fuller study of the noble subject of geography. Within a few years much discussion has arisen regarding the value of geography as a school subject. At a recent educational meeting President G. Stanley Hall said in substance that geography as taught in the majority of schools to-day is little better than a mass of disconnected facts, a heap of mental rubbish, to master which is a waste of time and energy. If this judgment is sound, it is, indeed, time for teachers to be aroused to a clearer view of the meaning and worth of the study of the earth as the home of man. Learned men may give their views, and courses of study may be revised by "committees of ten," but the end desired will be attained only when the teachers of primary and grammar grades realize how fascinating is the real study of geography, and that, in place of "disordered and dismembered fragments," they can present to their pupils an orderly and well developed science.

In the kindergarten the little child learns to repeat verses—for example:

"Great, wide, beautiful, wonderful World,
With the wonderful water round you curled,
And the wonderful grass upon your breast,
World, you are wonderfully drest.

You friendly Earth! how far do you go
With the wheat-fields that nod and the rivers that flow,
With cities and gardens, and cliffs and isles,
And people upon you for thousands of miles?"

To the child these may be only word pictures, but as he advances to the study of geography the subject should be so developed that this beauty and grandeur of the world will reveal itself to him.

It is at this point—the very beginning of the study—that so many pupils are prejudiced against it, and all because they are lost in a tangled maze of definitions and statistics—both dry and meaningless to many children.

The younger pupils must, indeed, learn of hills and mountains, rivers and lakes, and the various other physical features which constitute the earth's surface, and it is in connection with this very work that the skillful teacher finds opportunity to introduce the illustrative poem, the story or the vivid description.

It has been my experience that all children love poetry, so bring to them at this point what the poets say of mountains, rivers and valleys:

"The brooklet came from the mountain,
As sang the bard of old,
Running with feet of silver
Over the sands of gold."

"I'm hastening from the distant hills
With swift and noisy flowing,
Nursed by a thousand tiny rills,
I'm ever onward going."

"I have stood
Where Hudson rolled his lordly flood:
Seen sunrise rest and sunset fade
Along his frowning Palisade;
Look'd down the Appalachian peak
On Juniata's silver streak;
Have seen along his valley gleam
The Mohawk's swiftly winding stream;
The level light of sunset shine
Through broad Potomac's hem of pine;
And Autumn's rainbow-tinted banner
Hang lightly o'er the Susquehanna."

Thus supplemented by passages of descriptive poetry, the meagre statement of the text-book may be enforced at every point, and the geography recitation will no longer be a mere exercise of mental gymnastics in which pupils

> " Can string you names of districts, cities, towns,
> The whole world over, tight as beads of dew
> Upon a gossamer thread."

When seen through the poet's eyes, the familiar surroundings of every day life reveal hidden beauties, and, in imagination, the scenes, the customs, and the wonders of distant lands are brought near.

Take for illustration the study of the United States. Shall we be satisfied to have a class of boys and girls, who are studying for the first time this great country, commit to memory the names of bays and capes, mountains and rivers, states and principal cities? Shall we not, rather, try to bring before them something of the grandeur of the physical features; the lofty mountains with their well nigh inexhaustible stores of coal and iron, gold and silver; the boundless plains across which flow the great rivers like gigantic arteries, year by year renewing the life of the soil, and creating and serving the vast commercial interests of a people; great lakes like inland seas; the vast extent of coasts bordering upon two oceans, and the many magnificent bays and harbors making opportunities for commercial cities unequaled by any other nation.

Thus to make plain that the physical features determine in very large measure the development of a country introduces directly the idea of cause and effect upon which all true study of geography must be based. To awaken this new interest in the study, question pupils as to why certain sections are densely populated and certain other sections are sparsely populated; why great cities are located where they are; the effect upon the country of great industries in coal, iron, wheat, cotton, cattle, etc.; the importance of all highways of commerce—roads, railways, rivers, canals, and lakes.

This is but a suggestion as to what may be done by an enthusiastic teacher who knows the possibilities of the subject and keeps ever in mind that to lead a pupil to get even a little for himself is far better than to give him whole stores of information.

A general survey of South America will further illustrate my thought of the difference between a broad, interesting and scientific —though elementary—study of a grand division, and the bewildering and belittling work, consisting wholly of the matter and the questions contained in the text-book, a practice common in too many schools even at the present day.

Place before the class a good relief map of the continent. At the outset the teachers will thus be able to test the results of the pupil's previous teaching. If the work up to this point has been productive of power, or, in the words of Prof. Henderson, if the "knowledge thus far gained is translatable into power," then the pupils will read the new map with ease and increasing delight.

They will discover the great mountain wall which skirts the entire western coast, the plains sloping to the east and south, the mighty rivers bringing back to the ocean the melting snows from the mountain sides. A glance at the coast line will show the bays, harbors and inlets. Many other points will soon be discovered.

So much for the physical map. Now with a series of political and industrial maps, a good geographical reader, and the frequent suggestion by the teacher of matters of valuable information, the pupils will acquire a knowledge of this grand division both scientific and interesting.

There is now no limit to the information that may be gained. It depends upon the pupil's ability to read, and what he is able to express on paper or in any form of recitation will depend upon his training and power in the use of language. Let the reading be done systematically, with definite topics such as will be found in any good text-book as a guide.

If the reading is followed by sharp, vigorous questions by the teacher, the work will not be desultory. Do not require the same information of every pupil. One will naturally be interested in the Amazon river and will enjoy describing this as the greatest river system of the earth, while another will gain equal power in telling about the Andes mountains with their snow-capped peaks and volcanoes. It is impossible in the limited time for all the pupils to learn all about even one country, but, in addition to the general topics required of all, each pupil can make a particular study of at least one subject calling to his aid pictures, historical incidents, and poetical descriptions. Teachers of history are agreed that a careful study of the geography of a country is a first requisite to a satisfactory study of its history.

At this point much might be said of associating geography with history in class work, the one supplementing and enforcing the other, but this hint must suffice.

The real interest in the study will be a veritable surprise to teachers used only to listless indifference or positive dislike on the part of former pupils. But to maintain the interest on this high plane the teacher must have a wide preparation. She must know much more than she is to teach.

One who has read and enjoyed the chapter on the Thames river in Huxley's Physiography will be prepared to interest a class of pupils in the study of rivers. Not one-quarter of the information therein contained is to be imparted, but it is the stimulus, the reserve power of which the teacher is conscious, that carries her class forward with enthusiasm and profit.

Taught with earnestness, and with broader knowledge than is contained in the text-book, geography will prove to be not "a limbo of tortures," but a storehouse of information to which the pupils of to-day will be glad to add more and more in the years after school days are over.

That love of reading which it is the hope of our schools to give to every one coming under their influence will be found to depend in large measure upon the study of geography. It is a significant fact that of the books drawn from public libraries books of travel rank among the highest in number.

There is a fascination in reading or hearing of lands and peoples far away which has characterized the race since earliest times. The Wanderings of Ulysses, The Journeys of Aeneas, The Story of Marco Polo, The Voyages of Columbus, The Exploration of Africa by Stanley and Livingston, The Search for the North Pole—these, and others like them, will never lack interested readers whose interest is to be quickened, if not aroused, by the study of school geography.

Notes On Teaching Geography.

By Thomas M. Balliet, Superintendent of Schools, Springfield, Mass.

Without quibbling about a definition of geography, or discussing the question whether it should be regarded as an independent science or as made up of other sciences, we may say that as a study in elementary schools it ought to include at least the following: A treatment of the different continents, including their general relief, their drainage and such features of their coast line as have an important bearing on commerce; a description of their important political divisions; a description of the life of the people and of their important industries; an account of their commerce, and a brief description of the plant and animal life in so far as these enter into the industries and trade.

As the physical geography of a country determines often to a large extent its political geography, such parts of physical geography should be taught as are simple enough for elementary pupils to comprehend and at the same time furnish an explanation for important features of industrial, commercial, political or social life. Physical geography as an independent study belongs to the high school and the college.

As to mathematical geography, but little time should be devoted to it in elementary schools. A study of the rotation and revolution of the earth and their most obvious effects, and a very elementary study of longitude and latitude, is virtually all that should be attempted.

Having mapped out in the rough the ground to be covered, we may ask in what order these various phases of the subject should be taken up. Shall we follow the logical order of the subject, or the psychological order as determined by the child's interest and his ability to comprehend?

As political geography is so largely determined by physical features, such as relief and drainage, and by meteorological conditions, if we follow the logical order we begin by leading the child to observe the simple physiographic processes and the elements of drainage as they are illustrated in every school yard, and then proceed to teach him the general relief of the continents and their drainage, together with the prevailing meteorological conditions, before we teach him much political geography or have him study to any extent the social life of the people.

If we adopt the psychological order, we must first of all determine in what order the child's interest develops in the various phases of the subject.

We must distingush, however, between that interest which may probably be called spontaneous, and the interest which is due chiefly to the skill and enthusiasm of the teacher. It is the development of spontaneous interest which must guide us. Good teaching must both guide and follow this interest.

Our courses of study in geography are based too much on the logical order of the subject. In our best schools certain phases of geography are taught several years before children feel any natural interest in them. The fact that these phases of the subject are well within the comprehension of children is no justification for teaching them unless they are found to appeal also to their spontaneous interest.

Speaking generally, children feel an intrinsic interest in human life and in the human aspect of nature long before they feel any such interest in the scientific aspect of nature, either animate or inanimate. Their earliest geographic interest, if it may be so termed, shows itself in an interest in the home life, and especially child life, of various countries of the world. The simpler this home life is and the more sharply it contrasts with their own, the deeper the interest. Later they become interested in the larger social life and in the simpler phases of the industrial life of other countries. They become interested in and observant of their own social life chiefly as they come to learn how it differs from the social life of other peoples.

This suggests the point of beginning of geography. Books of the type of "Seven Little Sisters," familiar to all teachers, represent the kind of material with which we should begin. This phase of geography passes by imperceptible gradations into history. The history of the simple social life of our own country two centuries ago appeals quite as strongly to children as does the social life of foreign countries. This feature of geography, together with history, leads inevitably tc an interest in the location and description of the countries to which it relates, later to a desire to know their industries, their government, their political life, and finally, even to an interest in their physical geography in so far as it underlies all these. In short, in geography we should begin with the human phase of the subject and end with the scientific—following an order in the selection of topics such that each topic will escape the necessity for knowing the next following and will develop a spontaneous interest in it.

Whilst young children have no interest in the study of mere locality as such, at a later stage in their development, they do develop such interest, and map drawing and the study of maps becomes fascinating work. It is the period from about twelve or thirteen to sixteen when they delight in mechanical work and in doing it with precision and accuracy. I believe that more emphasis may profitably be put on map drawing without the use of construction lines at this period than has been customary in recent years in the best schools of the country.

From what has been said, it would seem to follow that the early emphasizing of the physiographic phase of geography is undesirable, not so much because it is beyond the comprehension of children as because it does not naturally appeal to their interest. The fact that any teacher can interest some few children in it and an enthusiastic teacher a good many, is not a conclusive argument for such work.

Whilst the first maps of the continents which children ought to see and study should be relief maps, the actual study of relief and its effect on drainage, should be postponed until pupils reach the higher grammar grades. The use of sand moulding in teaching relief for over a dozen years leads me to believe that it is not the most economical method of teaching relief, and that it will, before long, be generally discontinued in schools.

In the middle and higher grammar grades when pupils are able to grasp simple truths in physics, the study of physiographic processes should be begun by actual observation and the foundation be laid for the study of the elements of physical geography. The elements of erosion, the work of rivers, the meaning of "drowned" coasts and river valleys, the various stages in the life of a river, the elements of glacial geology in so far as it determines geography and related topics, appeal to the interest of children in the higher grammar grades and can be taught with profit. To these may be added the elements of meteorology in so far as they relate to winds, rainfall and climate.

I believe that it is a mistake to confine the study of "home geography," or "*Heimats-Kunde*," as the Germans call it, to the primary and lower grammar grades. The purpose of "home geography" is to develop "afferceiving concepts," by direct observation, with which the pupil may afterwards conceive the geography, the social, industrial, and political conditions, of countries that are beyond the range of his observation. Whilst everything that is taught in geography, as in other subjects, should be a preparation for the study of what is immediately to follow, it should rarely be taught solely for this purpose, but should appeal to the child as of intrinsic interest in itself. The "home geography" which is needed to lay the foundation for what is to be taught in the higher grammar grades should itself be taught in those grades immediately before it is needed, so that even if it have no intrinsic interest for the child, it may become interesting because of its immediate relation to something else which is interesting.

To illustrate: if relief and the simpler physiographic processes are to be taught only in the higher grammar grades, then it is a mistake to crowd into the "home geography" which is to be taught the fourth and the fifth year of school, as is now commonly done, observation work in the physiographic processes which may be witnessed in the school yard. If industrial and commercial geography are to be seriously studied only in the higher grammar grades, say the seventh or eighth year of school, then it is a mistake to make the preparation for this work in the "home geography" which is taught in the third, fourth and fifth year.

It seems to me that by avoiding the premature teaching of many topics, and by eliminating needless material, it will be possible to shorten the time now devoted to geography in good schools and at the same time make the teaching considerably more effective and thorough.

Geography In The Concrete.

By CHARLES A. McMURRY, Normal School, Normal, Ill.

THE dullness that has marked much of our teaching of geography has been due partly to the meagreness, even barrenness of instructive detail in the treatment of its leading topics.

This concrete filling is derived from several sources, chiefly from geography itself, also from history and from natural science.

Some well-recognized and purely geographical topics are very rich in instructive particulars, for example, the Hudson River, Salt Lake, irrigation in the arid districts, the Colorado River, Mt. Shasta, the cod-fisheries, the City of Washington, &c., &c.

Now, with the exception of the pictures in geographies, which are used to little purpose, these topics, as usually handled in our schools, are almost totally stripped of their concrete detail. To awaken a real interest in the City of Washington we shall need to spend three or four half-hour lessons upon it. Make a map of Pennsylvania Ave., with the Capitol on a hill at one end of it and the White House at the other. Locate (and examine pictures of) its chief public buildings and monuments. See its setting upon the Potomac. Look in upon Congress, and note what is going on. Go into the Treasury vaults; in short, realize the important elements in the capital city by entering into its details. There is no other possible way of rendering this topic truly instructive and stimulating to thought.

It is also instructive to discover that the government at Washington is quite similar to that at Albany, N. Y., or Harrisburg, Pa., the division of powers into the three departments being identical, and even the buildings in the state capital are often similarly arranged for purposes of legislation, &c.

Such study as the above into details and relations is tenfold more fruitful than the mere learning of names of capital cities or definitions of governments.

To illustrate the idea of the concrete treatment of a topic, entering into its details, the study of a coal mine will serve the purpose. Instead of a bare statement that hard coal is produced in immense quantities in northern Pennsylvania and soft coal likewise in Illinois (such as our geographies give and children learn) let a coal mine be studied. The difficulty and expense of sinking the shaft, its size and curbing, pumping out the water, &c., are treated. As soon as the stratum of coal is reached describe the mode of ventilation, of tunnels, blasting, cars, hoisting and loading of trains. In the mine the caving in, and dangers from explosions, fires, &c., need full treatment. Pictures are wanted also to give definiteness and clearness to the topics treated. Diagrams and drawings on the board are necessary. Later the common uses of coal upon railroads, in machine shops and factories, for rolling mills, ships and dwellings should be detailed. Finally the area of coal fields in Pennsylvania, Illinois and other states should be definitely fixed and maps drawn by pupils to show their idea of these districts. Even the chief cities which serve as centres for the coal trade should be noticed, as Pittsburg, Philadelphia, Chicago, Erie, &c.

In this manner of treatment we get not only at details but also at the large and comprehensive grasp of great industries in their proper relations to structure, commerce, manufacture, raw production, domestic uses and so on. In short, the details properly selected and arranged are indispensable to the grasp of the larger wholes. To memorize two or three sentences about coal production, and later to mention coal in connection with the products of a dozen or more states is utterly futile as a method of understanding this great business in itself and in its relations to others.

A second requirement of equal importance with the use of concrete details is the proper selection of *centres* around which to organise these details. The coal mine is such a centre. Others are the Hudson River, the City of Washington, the White Mountains, Niagara Falls, Minneapolis, gold mining in California, the Colorado River, Pike's Peak, cotton raising in the south, the beet-root sugar industry, and a cotton mill at Lowell.

One of the chief faults of our geographies is their failure to select such centres of geographical knowledge and to organize the facts around them. They have made slight efforts in this direction but it has not become a fundamental principle in the treatment of geographical topics. (That is in the plan and construction of geographies).

A still deeper inquiry into this proposal to select *centres* for organizing geographical materials will discover that these centres, if properly selected, are found in themselves to be based upon great *typical* or *representative* ideas in geography. A description of one coal mine is a basis upon which to ground all knowledge of coal mines. Not that they are all exactly alike, but that the main features are the same, *e. g.*, ventilation, tunnels, pumping out or removal of water, dangers of fires and explosions, hoisting, loading, shipping and uses. A short and yet incisive method of understanding coal mines and the whole coal business in all countries is first to see and understand a particular coal mine. A brief comparison with other mines will bring out the main points essential to the grasp of all.

A study of the Hudson River for a full week in 5th grade, bringing out in detail its scenery, commerce, railroads skirting the shores, its steamers, its sources in lakes and mountains, its cities, bridges, factories and water power, its canal communications with Lake Erie and the north, and with the anthracite coal regions, its history, legends and stories, with New York City and harbor at its mouth—this detailed treatment of the Hudson in summer and winter will give the children more valuable geographic knowledge than the memorizing of the names, locations and directions of all the chief rivers of the world.

Moreover a full knowledge of the Hudson River with pictures of its scenery, commerce, &c., will form an indispensable basis upon which to ground a later knowledge of the Rhine, Thames, Rhone, Nile, Mississippi, Columbia, &c. To understand thoroughly one important navigable river near home will make it possible in one quarter of the time to get an appreciative knowledge of all the similar rivers of later study.

What better means of securing keen insight into the striking features of the Rhine and at the same time a lively review of old lessons on the Hudson can be devised than to set up a comparison of the Hudson and the Rhine, when later study brings us to Europe. Which is the longer? Which more important for commerce? Compare the cities on the Rhine with those on the Hudson. Which has the finer scenery? Which is more noted in history? What canal connections has each? Compare their mouths, one a delta, the other not. Such comparative study arouses a fine and thoughtful interest. It gives insight and leads to the great truths of river uses.

Geography is a complex subject, combining materials drawn from physical nature (natural science) and from man's interests (history).

In describing the *beet-root sugar industry* we examine the beet-root as a plant (botany), the process of diffusion for extracting the sugar (physics), refining (physics and chemistry), the encouragement of the sugar industry by Napoleon and later by the French and German governments (history). The relation of sugar production to agriculture, commerce, manufacturing and government bounties gives it a pronounced geographical importance, and a comparison of beet-sugar production with that of cane-sugar in the southern states, in Cuba and in Hawaii, and with maple-sugar production, organizes this whole group of related facts into a large topic.

A series of three or four lessons on the sugar production will serve to bring these related facts together and unify them naturally under one head.

In this topic what is the relation of geography to the science topics? In such a treatment the science topics, as such, cannot be adequately handled. They are incidentally drawn in so far as they supply necessary facts and details for the explanation of geographical points. Geography has a right to draw into its circle of ideas whatever, from any source, it needs for its own purposes.

The same is true of the relation of geography to history. The Hudson River for example, even as a geography topic, is very rich in historical associations. It derives its name from a navigator known to us in early history. The names of cities and points of interest along its banks can only be explained by a reference to history, as Manhattan, New York, Albany, Mohawk, West Point, Erie Canal (its building), Saratoga. This is true also in many other cases. Its being a drowned valley with a tide reaching almost to Albany is explained by the history of geology.

History furnishes an abundance of facts which greatly enhance the value of the Hudson as a geographical topic.

On the other hand, in the geographical treatment of the Hudson we are not called upon to narrate the whole story of Henry Hudson, nor of Burgoyne's Invasion, nor of Arnold's Treason and André, nor of the building of the Erie Canal, nor of the early Dutch settlers, nor of Washington Irving, Sunnyside and Sleepy Hollow. These things belong properly to history and should be handled fully in the history lessons. It is very evident that history can not dispense with geography, nor can the geography dispense with historical materials. Nor do the two studies need to be mixed and confused. Let the history handle its great events with proper regard to their geographical environments; let geography treat its topics with a due regard for those historical events that have left their traces upon geography. Thus the two subjects will be properly correlated and each will throw needed light upon the other.

In studying the geography and history of the United States and of North America, the close and interesting relations between geography and history are thousand fold. Our pioneer and colonial history are full of interesting episodes which are scattered thick from New England to California. The Great Lakes and the Mississippi Valley have given us a score of heroic characters and enterprises standing out in strong relief against the background of pioneer hardship and danger. These stories are destined to play a great part in the early education of millions of boys and girls in the coming years. All these stories have a definite geographical setting and give a decided impress of romance and poetry to the rivers, prairies, lakes, forests and mountains of our middle and western states.

The same relation which we noticed between geography and history along the Hudson is found in all of our states. These studies should stand in close mutual connection. Many of the western schools are handling geographical and historical topics in parallel series. The same year in which the children study the geography of the Ohio Valley they study in history the stories of Boone, Robertson, George Rogers Clark and Lincoln. Both studies are very rich in concrete details and in great and striking characteristics.

It may seem strange that with such an overplus of rich and appropriate material for geography and history we should have the ingenuity to make these studies so dry and tasteless as they often are. Two of the chief reasons for this curious result are found, first, in the fact that we have stripped the geography topics of the indispensable concrete detail in which they are naturally so rich, and secondly, we have failed to select those central topics which typify the essential geographical classes and laws.

Instead of giving the children a clear and animated account of the few chief things that are necessary to geographical insight we have packed their memories with a cart-load of barren names and generalities.

Fortunately the book companies are beginning in good earnest to supply the detail which must be largely lacking in our text books. The geographical readers, of which we have now a goodly number, are already supplying a large share of the necessary detail.

These books should be used by teachers and pupils in the geography lessons where they belong and not in the reading exercises.

Nothing in the way of information material should ever be pushed in as a substitute for the best classic English masterpieces. From the first grade through the High School the best classic stories, poems and prose masterpieces should have undisturbed sway in all the reading exercises of the school.

The Work In Science In Grade 6 B.

ICHARD E. DODGE, Professor of Geography, Teachers College, Columbia University.

HE work in science, as now planned for Grade 6 B, (second half), includes three related divisions, Physical Geography, Geology and Mineralogy, and one division, Mathematical Geography, which, though important for its own sake and elp in other work, is difficult and somewhat unrelated to the r subjects with which it is connected. The skillful teacher, expert in the whole field of the earth sciences, could from an outline, form a plan for her own use that would be al, unified and progressive, and capable of giving the pupils able information and power. We cannot, however, expect our hers of any grade to be experts on every subject, and must expect ry small number to be even well trained in the earth sciences. ce the importance of organizing a plan sufficiently elastic to fit personalities and needs of all teachers, and yet of such a char- r that the teacher, who should follow an outline or text-book or less blindly, could not do his pupils too much harm.

The weak part of many plans for science work is that too much cluded, and the pupils get a little of everything and not much of hing. Under such a plan they get facts but not principles, in- ation but not knowledge, a mass of unusable details rather than fundamental truths well illustrated that will be of value edu- nally and practically hereafter.

Such an inclusive plan, blindly followed, tends to create super- ity on the part of teachers and taught, and helps to enforce the non conception that geography and the related sciences treat d things" only. It is not the rocks, the hills and the valleys streams that are dead, for they are all full of life, activity and r, and on every hand there are evidences of work accomplished operation. The teacher who can get her pupils to see the at work, will win their sympathy and give them a new in- into nature that will help them all their lives, though the y is but elementary and incomplete.

If we would have our pupils get from science study that which will help them all in school and out, in early life and later, we must arrange our courses with definite aim and purpose in mind, we must exercise great choice and care in the planning of our courses and in their execution. In order to have class work effective, the teacher must realize that all related work has one common aim, and must feel at liberty to order the course so as to lead and guide the pupils by the lines of least resistance, on part of pupils and subject, to that aim or end.

It seems to me that the aim of the work in New York City schools should be an understanding of the more important ways in which the physical features of the earth have influenced and are influencing man, and other forms of life, with particular reference to the phenomena in the vicinity of New York. Such a course then should not include a little of everything that could be included in an advanced course of a similar character, but should be limited to the study of the features of earth, air and water that have the greatest importance in controlling the distribution, character, and lives of man, animals and plants. Such facts as are necessary for a scientific understanding of the earth in its relation to man, should be arranged in a logical order, so that consequences follow causes, and should be just as complete as is necessary to lead up to the next stage in advance, and no more. Every step should be illustrated by as many instances as possible, from all parts of the world, and should be made interesting as well as clear. The causal idea should be the controlling one in all stages, that the pupils may get well ordered conceptions, and receive some training in scientific thinking. The student should be lead to question the earth, and to seek for the causes of the geographic conditions about them, and the way they in their daily life are influenced by such conditions.

From such a standpoint, not four subjects, but one should be the title of the course in Grade 6 B. That title, it seems to me, should be Physical Geography, and the course should include the study of the more important features of earth, air and water. As much geology should be included as is necessary to understand the origin and character of land forms; as much mineralogy and lithology as can be illustrated about New York City, and can be related causally to the main theme of the course; as much mathematical geography as is necessary to understand the important controls of climate—the winds and ocean currents—and the units of earth measurement—latitude and longitude. In all cases definitions should be given as concise, clear and sensible summaries of important and inclusive ideas, and not as introductions and as things by themselves, that need explanation. The child must recognize the need and advantage of a clearcut definition, as a shorthand expression for a complex composite of related ideas, in order to have definitions serviceable, and relegated to their proper position in education. Geography suffers more than we usually realize because in most text books the definitions lead rather than follow the thoughts to which they belong.

In such a course as is outlined in our printed syllabus, there is no one order of treating the larger features of the earth and its enveloping water and air, that is vastly superior to any other order. Each follower of such a course should adopt the order that he can pursue most easily and successfully, with the least wear and tear on himself and his pupils, and that least modifies the logical unity of the subject as a whole. The following sequence appeals to me as being workable and logical, and as containing the most of the important facts of physical geography that are necessary at this stage of the child's advancement. It surely contains all that can well be done in two and one half hours a week for half a year, and yet it is, I think, not as inclusive as the printed course of study from which this had been made by a process of rearrangement and culling.

The first conceptions, by way of review, should be of the relations of continents and oceans; that the oceans are supported by the rock mass of globe, and overlap the continents where there are continental shelves, as along our Atlantic coast. Then rationally follows a study of the outline of coasts, as straight and indented; the origin of such coasts, by uplift and depression (or drowning); and the relation of such coasts to commerce, as shown by harbors, lighthouses and lightships, life saving stations, the position of important cities, etc.

Then taking up the land surfaces, which should receive the greater attention as being the home of man, we should analyze into their component parts, not according to altitude, as is so often done, but by origin. Our classification would then include plains and plateaux, mountains and volcanoës. All land masses are exposed to the actions of the elements, which are continually attacking them, and hence are worn into highlands and lowlands, and in all these are depressions called river basins.

River basins are scattered as thickly as they can be over the earth, and each boundary or divide separates two basins. In these basins, with their two lateral and one longitudinal slope, we find rivers varying in size at different seasons, and under different conditions, but always at work. The conception of a river as a mass of water and detritus, proceeding toward the sea, naturally follows, and all the necessary definitions can be given in a causal way. The river should be treated as the result of rainfall, and as the conveyer toward the sea of the detritus formed largely by weathering. Atmospheric and river wearing should be considered together.

To make this work clear the processes of atmospheric action as seen on rocks and on houses, and of river action as seen in local streams and gullies, or in the street on a rainy day, should be considered carefully and in as great detail as the end in view demands. The principal aim should be the understanding of the meaning of will help them all in school and out, in early life and later, we must arrange our courses with definite aim and purpose in mind, we must exercise great choice and care in the planning of our courses and in their execution. In order to have class work effective, the teacher must realize that all related work has one common aim, and must feel at liberty to order the course so as to lead and guide the pupils by the lines of least resistance, on part of pupils and subject, to that aim or end.

It seems to me that the aim of the work in New York City schools should be an understanding of the more important ways in which the physical features of the earth have influenced and are influencing man, and other forms of life, with particular reference to the phenomena in the vicinity of New York. Such a course then should not include a little of everything that could be included in an advanced course of a similar character, but should be limited to the study of the features of earth, air and water that have the greatest importance in controlling the distribution, character, and lives of man, animals and plants. Such facts as are necessary for a scientific understanding of the earth in its relation to man, should be arranged in a logical order, so that consequences follow causes, and should be just as complete as is necessary to lead up to the next stage in advance, and no more. Every step should be illustrated by as many instances as possible, from all parts of the world, and should be made interesting as well as clear. The causal idea should be the controlling one in all stages, that the pupils may get well ordered conceptions, and receive some training in scientific thinking. The student should be lead to question the earth, and to seek for the causes of the geographic conditions about them, and the way they in their daily life are influenced by such conditions.

From such a standpoint, not four subjects, but one should be the title of the course in Grade 6 B. That title, it seems to me, should be Physical Geography, and the course should include the study of the more important features of earth, air and water. As much geology should be included as is necessary to understand the origin and character of land forms; as much mineralogy and lithology as can be illustrated about New York City, and can be related causally to the main theme of the course; as much mathematical geography as is necessary to understand the important controls of climate—the winds and ocean currents—and the units of earth measurement—latitude and longitude. In all cases definitions should be given as concise, clear and sensible summaries of important and inclusive ideas, and not as introductions and as things by themselves, that need explanation. The child must recognize the need and advantage of a clearcut definition, as a shorthand expression for a complex composite of related ideas, in order to have definitions serviceable, and relegated to their proper position in education. Geography suffers more than we usually realize because in most text books the definitions lead rather than follow the thoughts to which they belong.

In such a course as is outlined in our printed syllabus, there is no one order of treating the larger features of the earth and its enveloping water and air, that is vastly superior to any other order. Each follower of such a course should adopt the order that he can pursue most easily and successfully, with the least wear and tear on himself and his pupils, and that least modifies the logical unity of the subject as a whole. The following sequence appeals to me as being workable and logical, and as containing the most of the important facts of physical geography that are necessary at this stage of the child's advancement. It surely contains all that can well be done in two and one half hours a week for half a year, and yet it is, I think, not as inclusive as the printed course of study from which this had been made by a process of rearrangement and culling.

The first conceptions, by way of review, should be of the relations of continents and oceans; that the oceans are supported by the rock mass of globe, and overlap the continents where there are continental shelves, as along our Atlantic coast. Then rationally follows a study of the outline of coasts, as straight and indented; the origin of such coasts, by uplift and depression (or drowning); and the relation of such coasts to commerce, as shown by harbors, lighthouses and lightships, life saving stations, the position of important cities, etc.

Then taking up the land surfaces, which should receive the greater attention as being the home of man, we should analyze into their component parts, not according to altitude, as is so often done, but by origin. Our classification would then include plains and plateaux, mountains and volcanoės. All land masses are exposed to the actions of the elements, which are continually attacking them, and hence are worn into highlands and lowlands, and in all these are depressions called river basins.

River basins are scattered as thickly as they can be over the earth, and each boundary or divide separates two basins. In these basins, with their two lateral and one longitudinal slope, we find rivers varying in size at different seasons, and under different conditions, but always at work. The conception of a river as a mass of water and detritus, proceeding toward the sea, naturally follows, and all the necessary definitions can be given in a causal way. The river should be treated as the result of rainfall, and as the conveyer toward the sea of the detritus formed largely by weathering. Atmospheric and river wearing should be considered together.

To make this work clear the processes of atmospheric action as seen on rocks and on houses, and of river action as seen in local streams and gullies, or in the street on a rainy day, should be considered carefully and in as great detail as the end in view demands. The principal aim should be the understanding of the meaning of existing topography at home and abroad. In spite of the apparent detail of the work, success is not difficult, for all the phenomena are familiar and abundant. There would seem at first glance to be some apparent difficulty in studying the development of topography on hard and soft rocks before the rocks and minerals have been considered ; but an experience of several years' teaching has shown me that pupils are not embarrassed by such a lack. They can by analogy realize the different resistances of hard and soft rocks, to erosive agencies, both from the mechanical and chemical sides. Indeed, in some cases an over emphasis of the mechanical hardness of easily weathered minerals, such as feldspar, has proved embarrassing at a later stage.

The topographic forms resulting from atmospheric and river work, the origin of soils, the meaning of steep slopes, highlands, etc., should be considered and illustrated by as many instances as possible. Lakes, waterfalls, deltas, flood plains, talus slopes, etc., should be studied, not as individual things, but in their relation to the work of streams and the development of a river basin. A meaning is thus given to the land and water forms, and they are grouped together for a reason that all students will approve. Order and not chaos should be our aim in the presenting of material to children, even though we do not aim to make them youthful scientists. The relation of man and other forms of life to young, mature and old river valleys should be constantly illustrated and emphasized, and thus the way paved for a good understanding of the elementary principles of geographic control to be used as fundamental truths of everyday service in the later years.

In a similar way, the work of the glaciers of Greenland, Alaska, Switzerland, etc., should be studied as to their functions, that our children may understand the origin of our superficial topography, and particularly our soils. With such glacial phenomena as are to be seen on Long Island, in Central Park, Bronx Park, and on Staten Island, for everyday illustration, the task is very easy, and not beyond the power of the children of the grade. Likewise, the ocean should be considered from all sides, in its relation to man and life in general. Particularly should the constructive and destructive work of standing water, as seen in the ocean and lakes, be treated carefully as to process and result. In this way all that is necessary to be included concerning the movements of ocean waters can be treated logically. The effects of waves and tides can be noticed, and that of ocean currents suggested, to be amplified later when a comparative study of the continents is made.

As a result of such processes working on the original forms of the earth, we have our present topography in all varieties and stages of development. The classification according to origin as I have suggested above, is rational and simple. The secondary classification of each primal form given, according to amount of aging or development, follows as a natural consequence of the study of that which has preceded. Thus reason and not whim leads in our classification.

Similar ideas can thereafter be related in the pupils' or teachers' mind causally, and one suggestion will bring to the surface a host of examples. The rational memory is thus trained and the mechanical rote form of learning abolished, or practically so. Children trained in this manner will remember things in an orderly way for a greater and better reason that because "teacher told us to."

After such a study of the origin and development of land forms in general, we are ready to take up a discussion of the distribution of peoples, plants, animals, mineral products, industries, etc., as related to some of their reasons for being. Physical units of area, which have similar or essentially similar conditions, should be treated as a whole, and not divided into political areas, which may include parts of several physical units. For instance, the Atlantic Coastal Plain of the United States should be one unit, to be later divided for detailed study after we have discussed the general conditions. We should not divide this region into the Middle Atlantic and Southern Atlantic States, for the reason that neither of these divisions is a unit in itself, and because each contains parts of several great physical units and no complete unit within its boundaries.

As soon as we attempt such a study, however, we will find that it is necessary to consider the problem of climate so as to get a working knowledge of the other great geographic control of life distribution. Here the work in mathematical geography should help us in developing the problem causally. Within each great heat belt as developed by the work mentioned, we find a certain permanent system of winds, probably better treated more fully as to reasons for being in next grade. These winds are of certain systematic temperatures, and accompanied by certain amounts of rainfall. With very slight expense a few simple experiments can be arranged to show the origin of winds, and the processes of evaporation and rainfall. The influence of elevation and direction of mountains and of ocean currents should here be brought out and generalizations concerning the climatic control of man and life developed.

The last part of the work should be a summary applying the general principles of geographic control thus developed, to the different continents and different physical divisions of each. This for the purpose of making knowledge practical and not merely educational. In all the work the aim should be to give information and knowledge of practical service to the children in present and future school and home life.

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I have purposely omitted many points in the schedule as printed, because I believe it is better to do a few things well than to do too many poorly. Whatever we do should be well ordered, united and complete in itself. In such a course under teachers not well trained in the subject, the manner of procedure is often scatterbrained and the results superficial, and perhaps harmful to pupil and teacher. Such a plan as I have proposed, when rightly followed will, I know, produce results that are pleasing, and give training that is of value to the children.

Although our ideals or our actual doings must not be planned wholly with reference to practical utility, we must keep utility in mind, and any work that does not make the child a better master of himself, and give him a better insight into the practical ways of the world, must be modified to meet the existing needs. We cannot train embryo scientists, but we can train embryo citizens and men scientifically, and give them that which will make their lives better and richer ; we can give them a knowledge of facts and training in the organizing, testing, and use of facts that will make them powerful above their colleagues.

The Teaching Of Latitude And Related Subjects.

By Caroline W. Hotchkiss, Horace Mann School, Teachers College, N. Y.

The subject of latitude deals with commonplace phenomena, therefore its importance; it needs no elaborate appliances to demonstrate its principles, it requires little labor on the part of teacher or pupil in collecting illustrative material, its laboratory and equipment are continually at hand; yet it is a subject which the majority of teachers shrink from attacking, and one which children know little about when the lessons are over. The cause of the teacher's hesitation and the pupil's uncertain knowledge is patent. Teachers generally have not been taught to observe the facts of nature, and realizing their insecurity, rely upon geography text-books which teach generalizations without previous observations. Therefore, the work has a tendency to degenerate into a formal repetition of statements of facts which in no way touch vitally the daily life of the child. If these lessons are given with the endeavor to establish close relations between the laws which govern our planet and their long train of consequences, the teaching will cease to be formal and become rational and educational.

There are three questions which every good teacher will ask herself before she begins a new subject, as follows: 1. What additional power do I wish my pupils to gain? 2. What definite knowledge shall I expect them to acquire? 3. By what means shall I accomplish my desires?

The answers must depend upon the age and power of the pupils. We will apply them to the work of the 6th Grade.

After a series of lessons on the topics outlined here, children should have gained some broader conceptions of the universal laws whose operations fit the earth to be the home of man, an increased power of imagination without the use of symbols, an awakened interest in every day phenomena which will lead them to use their eyes in noting daily conditions which would otherwise have passed unnoticed, a power to interpret conditions in other parts of the world by reason of a clear understanding of what takes place at home, and the ability to state their observations in clear and simple language.

Each teacher must suit her methods to the needs of the pupils and to the conditions which surround the work; but enough has been said to emphasize the point that observation and experiment

Sun Pictures In The School Room.

By J. C. Lyford, Principal, Worcester, Mass.

MORE than twenty years ago, while teaching twelve and fourteen year old boys and girls geography lessons from the ordinary text book, I keenly felt the need of some means of giving spirit and point to my instruction. At once I began to make a collection of such magazine prints as had a bearing upon any of the subjects we happened to have under consideration. In a little time many of my pupils lent a helping hand, and soon quite a large store of illustrative material was accumulated. Then it occurred to me that it might be wise largely to confine my teaching to such regions, countries, peoples, and aspects of the earth as could well be illustrated by my growing stock of pictures. Out of this beginning came to be answered the question, "What portions of the text book shall I enlarge upon ; and what shall I partly or wholly overlook ?" a question which had long perplexed me. Finally, I concluded, success would come to me if I could solve two problems: first, I must stimulate the imaginations of my pupils by feeding their minds with good picture making material; and second, I must give them power to describe their mental pictures in appropriate language. From that date, class-room work grew to be comparatively profitable. But I was beset by a number of difficulties ; in a little time the pictures became worn and soiled, most of them were crude in execution, and many of them could not be relied upon for accuracy. All of them were small, being useful only in individual work, and wholly inadequate when placed before a class, where a prime requisite in a picture is magnitude. Such a picture should be large enough and realistic enough to gain and hold the attention of every pupil in a room, because the best time for a child to see a picture is precisely when the well-prepared teacher is making a point which that picture will illustrate or emphasize.

At that time Mr. Adams at the Normal School in Worcester, had perfected a simple and inexpensive form of apparatus for projecting transparent pictures by sunlight. Its possibilities for instruction were greater than those of the "Seven League Boots" or the "Wishing Carpet" we read about when we were young, for with it the world was literally to be brought into the school-room,

LATITUDE AND LONGITUDE.

It is easy to show the difficulty of locating a place on a plain globe. We do not have trouble in locating the New York Post Office or the Herald Office, because of city squares which are formed by two sets of streets running at right angles. Maps of the earth have two sets of lines running north and south, and east and west. What determines the direction of the north and south lines? As the earth rotates, two points remain fixed, viz., the poles, the opposite ends of the stationary earth's axis. The passage of the sun across the sky gives us morning, noon and afternoon. At noon the sun leaves the eastern part of the sky and enters the western. During the morning, shadows cast from vertical objects get shorter, until noon, when the sun reaches the highest point in the sky; after noon they begin to grow longer. Before noon our shadows point toward the western part of the sky; after noon toward the eastern part. At noon our shadow points to the north, proving that the sun crosses the sky south of our zenith. The association of meridian lines with our mid-day shadow and the convergence toward the poles will now be easily shown.

Many valuable and interesting problems with reference to length and direction of shadow on different days and at different places north and south of the equator, can be worked out by the children as the seasons change and the sun gets lower and higher in the sky. A simple dial made of a flat board with a vertical rod (a large headed pin if nothing better can be provided), could be placed in the window and observations of the sun shadow made upon sheets of paper which should be dated and kept for comparison. Thus, a school year of forty weeks would include observations during the equinoxes and solstices, the longest shadow associated with the longest winter day, and the shortest shadow with the longest summer day.

In order to see how meridians are distinguished, an analogy may again be drawn from our city streets,—as Fifth Avenue and lower Broadway divide the city into east and west districts, so the meridian of Greenwich divides the globe into east and west longitude, the long distance around the earth. These meridians are numbered, for convenience, the earth's circumference being divided into 360 degrees. If the meridians of New York, New Orleans, and Calcutta are learned, it will help to fix ideas of time and distance. Rotate a globe from west to east and develop the idea that places east will have sunrise before places west. It is as if the daylight traveled westward around the earth. The fact that all places in the same meridian have the same clock time should be demonstrated. With the simple equations, 24 hours = 360°, 1 hour = 15°, children will be able to work out many simple problems in longitude and time, the object of which should be to emphasize the effects of the earth's rotundity and rotation.

pairs. The camera, of course, sits in a south window, and the screen for the pictures will be on the side of the room opposite and thirty feet or more distant. The screen may be strong white cotton cloth, either plain or printed with opaque *gouache*, or a square may be painted directly on the wall. This arrangement will give a picture from six to ten feet square, with sufficient light so that note taking can be carried on through an exercise. The camera should be kept near by, protected from the dust, in a box, and some good trusty boys should be trained to make all necessary preparations in a minute or two. The slides should be kept in a case on shelves, carefully arranged, numbered and labelled. A catalogue with titles and descriptive notes should be looked upon as an essential, and after each exercise the slides should be neatly wiped and put away in their places. If besides these things the room can be provided with a movable blackboard on a vertical stand, to be used in map and chart making, the outfit of the picture room will be complete.

The original outlay for apparatus is small, but as time goes on and new slides are needed one realizes that they are an expensive luxury. The regular price is fifty cents each, though they may sometimes be bought for twenty-five, but if I may judge the cheaper ones are unsatisfactory, both in subject and in quality. In some places sets of slides owned by the city go from building to building, as books go out from a circulating library. But this can hardly be an ideal plan, because the pictures are seldom at hand when most needed, those using them cannot be relied upon to send them ahead on time, and the teachers cannot make that intimate acquaintance with them, so essential to their highest utility. And yet this plan is much better than none.

The professional teacher should not hesitate about making his own slides; let him set about this and the sources from which he may draw his material will be without number. This is the age of amateur photography; it is almost a general pastime, and if there are persons who have not already dabbled in it, they are probably secretly planning to do so. A good camera can be bought for fifteen dollars. Every maker of dry plates gives with each box full directions for making negatives, so that it is not necessary that the process should be described here. If any one can make a negative he can make a lantern slide, and then it will be easy to make a hundred or a thousand, granting a little time. It will be understood that slides need not necessarily be made from negatives of objects themselves; any picture may be copied, photograph, engraving or half tone. It will be found that, putting time out of account, the first slides will cost about ten cents each. Later on, as experience is gained, taking advantage of the wet plate process in vogue years ago, the cost may be reduced to three or four cents. Soon by borrowing negatives from friends who have been abroad, or by exchang-

The Gulf Stream in the North Atlantic and the Kuro Siwo in ie North Pacific carry warm water from the equator toward the)les, thus disturbing the latitudinal arrangement of the isotherms. ıe Peruvian current carries cool water from the Antarctic regions uatorward, and lowers the temperature west of Peru.

Isothermal lines thus worked out could be drawn on a Mercator ıll map and used to demonstrate the facts involved in the yearly volution. Any good physical geography gives temperature arts from which they can be copied.

The changes from summer to winter temperature is greater in mperate than in tropical latitudes. The changes in ways of living, od, clothing, the winter sleep of plants and their re-awakening in e spring are habits of the cool and cold belts. It is not true that l places in the temperate latitudes have four seasons. Wherever e annual range of temperature is slight by reason of warm ocean ırrents or sheltering mountain ranges, the seasons are generally ro, a rainy and a dry.

From these considerations of temperature it will be seen that nes correspond only roughly with the heat belts. In the Torrid)ne, the contrast between the length of a summer and a winter day the least, all places on the equator having days and nights of ıual length throughout the year. In the Frigid Zones the conast is the greatest. Compare the length of a winter day at Montal, New York, and New Orleans. This comparison will be most structive if the results are graphically represented by lines. The ıildren will get the idea of the day tapering toward the south in e northern hemisphere; the opposite being true from December June. Only those plants and animals which can survive the cold the long night will be found in higher latitudes. Find the places rthest north where the elm and maple can grow, the peach, the ape. Many such questions can be answered from the experience the child who has perhaps seen grape vines killed by frost before e grapes were ripe. Why do trees and shrubs grow shorter as we › north? Take a journey from Jacksonville to the mouth of the ackenzie and tell how the changes into the different heat belts uld be shown in the plant and animal life you would see ound you.

The work as suggested here is intended to be carried on side by de with other lines of geographical sequence. If the steps are ken slowly and reviewed from different points of attack, it would em as though at the end the objects for which we were aiming ight be accomplished. I have not tried to cover the whole ground school mathematical geography, but to suggest a simpler order treatment that will, I know from experience, make the hardest ırt of school geography simple and realistic to the pupils and ıe teacher.

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By its means they could go to the remotest part of the world in the twinkling of an eye, and back again, and tell about their trip before dinner time. It was merely necessary to get a Solar Camera, as the apparatus was called, prepare a room and buy the requisite slides. My desire was to illustrate Egypt. Selecting perhaps fifty pictures from a collection of several hundred, I studied them over and over again. It was an interesting and suggestive list. The Nile, Nile boats, irrigating wells, Egyptian gardens, water carriers, the camel, the donkey, the desert, the Nilometer, the palm tree, the date gatherer, the pyramids, a burying ground, the sphynx, a mosque, an underground temple, and forty more. How keenly I felt I knew nothing of these things but their names; yet I felt these are the things the children ought and would like to know about Egypt. I began a course in reading, including Warner's "Winter on the Nile," Mrs. Edward's "Thousand Miles Up the Nile," and Lane's "Modern Egyptians," and scarcely a year passes that I do not at least turn the leaves and look at the pictures of one or two books on Egypt. In this way my fifty slides, now grown to be a hundred and twenty-five, have given me a very definite conception of the country, a conception which I can with little difficulty convey to my children. In some such way as this I suppose every teacher must grow to feel at home with his pictures, his solar camera, and his dark room. If it is true that many teachers get little enthusiasm from picture teaching, it is largely because it really does call for a good deal of time given to preparation. Nothing can seem more stupid to a class of children than the mere exhibition of a lot of pictures, about whose names, even, the teacher may be in doubt.

The solar camera is available only on sunny days, and it should be set up in a room with south windows, though an east or a west room will answer. There are sunny days enough in a year for all practical purposes. If one wishes to provide for cloudy weather, a calcium or an electric light may be provided, in which case the expense and trouble would be far greater, and the results correspondingly poor. Every teacher can operate a solar camera, while an artificial light calls for an expert attendant. The picture room may be an ordinary class room, or what is better, a spare room apart by itself. In the latter event, it may be kept at all times darkened, so that at short notice any class in the building may be assembled without disturbing another. If a regular class room is used, one class must go out as another comes in. Sometimes it is possible to prepare two or more rooms with curtains, etc., so that children of different grades may be given seats of proper height. The shades for this window may be black canton flannel so aranged that they may be quickly put up and taken down by the children working in pairs. The camera, of course, sits in a south window, and the screen for the pictures will be on the side of the room opposite and thirty feet or more distant. The screen may be strong white cotton cloth, either plain or printed with opaque *gouache*, or a square may be painted directly on the wall. This arrangement will give a picture from six to ten feet square, with sufficient light so that note taking can be carried on through an exercise. The camera should be kept near by, protected from the dust, in a box, and some good trusty boys should be trained to make all necessary preparations in a minute or two. The slides should be kept in a case on shelves, carefully arranged, numbered and labelled. A catalogue with titles and descriptive notes should be looked upon as an essential, and after each exercise the slides should be neatly wiped and put away in their places. If besides these things the room can be provided with a movable blackboard on a vertical stand, to be used in map and chart making, the outfit of the picture room will be complete.

The original outlay for apparatus is small, but as time goes on and new slides are needed one realizes that they are an expensive luxury. The regular price is fifty cents each, though they may sometimes be bought for twenty-five, but if I may judge the cheaper ones are unsatisfactory, both in subject and in quality. In some places sets of slides owned by the city go from building to building, as books go out from a circulating library. But this can hardly be an ideal plan, because the pictures are seldom at hand when most needed, those using them cannot be relied upon to send them ahead on time, and the teachers cannot make that intimate acquaintance with them, so essential to their highest utility. And yet this plan is much better than none.

The professional teacher should not hesitate about making his own slides; let him set about this and the sources from which he may draw his material will be without number. This is the age of amateur photography; it is almost a general pastime, and if there are persons who have not already dabbled in it, they are probably secretly planning to do so. A good camera can be bought for fifteen dollars. Every maker of dry plates gives with each box full directions for making negatives, so that it is not necessary that the process should be described here. If any one can make a negative he can make a lantern slide, and then it will be easy to make a hundred or a thousand, granting a little time. It will be understood that slides need not necessarily be made from negatives of objects themselves; any picture may be copied, photograph, engraving or half tone. It will be found that, putting time out of account, the first slides will cost about ten cents each. Later on, as experience is gained, taking advantage of the wet plate process in vogue years ago, the cost may be reduced to three or four cents. Soon by borrowing negatives from friends who have been abroad, or by exchanging slides with correspondents in various States or countries, the stock of pictures will make satisfactory growth, and in many departments it will become complete. The teachers and children will be glad to help about cleaning glass, binding, labelling, catalogueing, and arranging the slides, and these little matters consume much time. The photographic annuals give all necessary details about the work, and I would also refer any one interested in the process to the appendix in King's Geographical Reader, Fifth Book.

The slides should be catalogued under several heads, for instance, "The Bee-Hive Geyser," should be found under "United States," "Yellowstone Park," and "Geysers." This will save much time when one wishes to select for immediate use. Of course they may be variously grouped to illustrate different chains of thought; for example, one may take the Mexican magney, the Cuban banana, the Egyptian date, the Japanese bamboo, the Chinese tea, and the East India rice to illustrate a lesson on the characteristic food plants of the world, or each of them may be used with others to illustrate the geography of a single country. The slides should be numbered and labelled, both on the sides and on the edges, so that any particular slide may quickly be found when lost in the midst of others. The slides may be selected from the stock and carried to the class-room in grooved boxes, arranged in natural order to correspond with the development of the lesson to be illustrated, or they may be taken about in slotted frames made for the purpose and planned to be suspended in a window to which the children have easy access. In this way the class may sometimes get a general idea of the pictures and their sequence. Even before they have been touched upon by their teacher. Fine results may thus be secured in schools generously provided with well chosen reference books.

As to the planning of picture lessons, many methods will suggest themselves to the thoughtful teacher. The pictures may be used in developing a subject at first hand. Suppose one wishes to teach "Wheat and Wheat growing in the United States." In the November number of *Scribner's Magazine* for 1897, is a timely article on the subject, giving in the best form all the needed facts and illustrations. These the teacher should become familiar with, as a part of her preparations. As she unfolds the story to the children, the pictures, copied, it may be, from the magazine itself, are displayed in proper order, and as they are shown, they are studied by the class. Maps showing areas of production and manufacture are freely used, and the great lines of transportation are clearly shown, so that at the end of a half-hour every one has well in mind the essential facts brought out by the lesson. A dozen or fifteen well chosen pictures are enough for one occasion ; the inexperienced teacher will be apt to confuse the impression given by the use of too many slides. This little set will include views of the prairie, the central cluster of farm buildings, the plowing team, t grain drill, the wheat growing in the field, the reaping machine work, the thresher, the burning of the straw, the grain on the w to the elevator, a whale back steamer, the flouring mill, etc. will be noticed that any one of these scenes will suggest abunda material for language work, oral or written. The children shou be prompted to keep little private note books, in which to jot dow such matters as strike their fancy, to be drawn from when makir reviews at a later time. It is not necessary to enumerate the goo things in an exercise such as I have suggested.

Sometimes the slides may be used to supplement a series of le sons, given without pictures, in the usual way. The class may ha been busied with Mexico ; its diversified climate and productions, i high and arid regions; its low and moist lands; its mixed popul tion and their primitive occupations. The pupils having acquire such knowledge of the subject as may be had in books will readil and intelligently converse with their teacher as she conducts a re view illustrated by a well chosen group of slides. One of the pleas ant and hopeful things about such work is that the children invar iably begin to acquire the habit of easy and natural speaking, s strongly to be encouraged. Sometimes I say, "Now I am going t show you some pictures but I shall not say a word about them. I you see anything you would like to know about, speak up." I need not be supposed that fifty wide awake boys and girls will si silently through a half-hour merely looking at a score of picture of the most absorbing interest. Their minds will become crowde with ideas, and ideas are the main spring of language, and th children will be very free to express themselves. After two or thre days have passed, I usually recall in a few words the salient point of the lesson, and ask each pupil to write out on paper what he bes remembers about the pictures. Some of them will write only a fe lines, but the thought will be fresh, and the language the child' own. At other times each child is required in turn to give an or description of his best remembered picture.

The teacher may place before the children a frame of slide and each child may be given a particular picture as the subject f special investigation. At some stated time in the future all may b required to report before the class the results of their study. I this way a whole country like China, Japan or India will be cover in a little time. As an aid to this kind of work, little explanato leaflets may be prepared by copying extracts from the works of sta dard authors. These leaflets, labelled and numbered to correspo with the slides may be kept in an envelope and given out to t children for study. Finally each child in proper order may sho his own slide on the screen, describing it meantime to his mates.

At another time the teacher may properly give his class a illustrated narrative or description. If he has been a traveler, eve in a small way, either in remote places, or in the neighboring wood and field, he has observed many things about which the children should be informed, and what he gives them out of his own experience they are quite likely to retain after much other hard-earned learning has been lost. Suppose he has been with his photographic camera to Concord for something about the famous fight, or to Salem for material about witches and witchcraft, or to Deerfield to learn about Rev. Mr. Williams and his children. He should then be able to entertain as well as to instruct his pupils, and in doing one of these things he would as surely do the other. A simple talk, helped out by a few nice pictures, may often transform a dreary hour into a red letter occasion.

Last spring one of my assistants made Concord the objective point of much of her teaching. Her class read Emerson, Hawthorne, Thoreau and Ellery Channing. Exercises in language were based on their writings, and the work in history and geography was planned so that when Patriots' Day came the schools were ready for a pictorial trip through the scenes with which they had so long been occupied. Meantime, every one having prepared a progressive map was as familiar with the Lexington Road, Monument street and Concord River as they were with the well known localities in their native city. Then going to the picture room, first of all, we carefully studied a large nicely illuminated map which the pupils had not hitherto seen. Carefully noting the location of the village centre, we put aside the map and with the pictures journeyed down the road to Lexington. Then we came back again to the map and visited the battle ground; later on we strolled through the old and the new cemeteries, and finally sauntered down to Walden Pond, going slowly everywhere and inquiring our way, as if we were, indeed, travelers in that classic town. When the pleasant spring days came numbers of the boys took a bicycle trip to Concord and found their way from place to place, troubling no one for directions. This is mentioned to show how realistic such instruction may easily be. As we prepared to take another such subject each pupil wrote a little composition on some matter suggested by our study, and illustrated his paper with blue prints made by members of the school from the negatives used in making the lantern-slides, so that pleasantly enough every one had a permanent memento of his work to carry home to his parents.

Finally it is a nice plan occasionally to entertain the children by showing them some pictures with no thought of an educational purpose; let them have a show, now and then, just for the fun they can get out of it. Give them some pictures taken in their own play-yard showing the familiar games of marbles, leap-frog and bombay. This is one of the things that helps to make school popular, and to reduce the attendance record to normal terms.

Maps and charts of all sizes and kinds can easily be made in the picture-room, and their production can be made another pleasurable exercise for the children. It is plain that any lantern-slide map can readily be traced in ink, pencil or crayon upon the screen. If, as has been suggested, the room be provided with a movable, up-right black-board or frame upon which the pictures may be projected, the dimensions of the picture may easily be varied. By drawing the frame near to the camera the picture will be made small; by reversing the process the picture will be made larger. Then by fastening to the frame a large sheet of paper, any devised tracing may be made directly upon it, and this the children can do quite as well as adults. The possibilities of this scheme are great. This is one of the most telling uses to which the solar camera can be put.

The above is only a part of what may be said about the use of sun-pictures in the school-room, but perhaps it is sufficient. It only remains for me to say that I shall be glad to correspond with teachers interested in what I have written.

Geography In The 7 A Grade.

By Beverley A. Smith, LL.B., Instructor Public School 81, Manhattan.

THE geography of the first half of the seventh year of the course of study is divided into three sections—political, industrial and commercial geography, and their subdivisions naturally represent a summing up of what has been the previous teaching of the pupil thus far in his school life. It is presumed that he is proficient in the location of a country, its political subdivisions, its cities, rivers, coast lines, plains, mountains; and that the subjects that are cognate thereto have been fully taught him. This grade therefore becomes a sort of application of this knowledge in order to show why the development of Europe and North America has been somewhat coequal.

A reference to the map of the world will show that North America and Europe are separated by the Atlantic Ocean which is comparatively narrow between Newfoundland and Ireland, and by reason of the location of Iceland, the grand divisions of Europe and North America are substantially still less distant from each other between Greenland and Norway. Referring then to the students' historical knowledge already gained in a previous grade, it will be seen that this subject of development may be treated on the basis of history, and the story may be told of the Scandinavian navigators of, say eight or nine centuries ago, who, pushing out from their homes came to Iceland, thence to Greenland, to Labrador, Newfoundland and even the coast of our own New England, found in the waters of these shores the wealth they sought. So that long before the time of Columbus, the tendency of the nations of Europe was towards the West.

Now, this desire to find in the ocean the treasure of substantial return in an equivalent of cash, may be regarded as the reason for the voyages of discovery by those adventurous merchants of France and of England who sought in the waters off the coast of North America the fish that then abounded and which have not ceased since that day to attract the trading instincts. So that this Atlantic Ocean furnishing as it did a means of livelihood for a part of Europe's population developed also a sturdy and strong race of seafaring men who aided materially in those adventures of discovery which marked

republic, for a republic is a government wherein the source of sove
eign power lies in the governed. A grouping, therefore, of tho
which are republics in name, in fact, and which are neither, would
valuable in this connection. To say that the European governmen
are monarchies, limited or otherwise, does not sufficiently represe
the fact. A description of the various governments under the
groupings will bring out the differences in each and show that pra
tically every country of Europe save Russia and Turkey has a legi
lative body consisting of two houses similar to our own Congres
that in those governments thus constituted, the head of the gover
ment suffers no change whenever a political policy has failed
its purpose, and that generally the administrative officers onl
change. The radical distinctions between a representative gover
ment administered by a changing executive as in the United State
France and Switzerland, and one whose executive is permanen
and whose duties are performed by ministers chosen from the dom
nant political party as in all the countries of Europe, save Turk
and Russia, should be shown by the teacher. Then, too, the fa
that in these latter countries, the executive head has no veto pow
over the acts of the legislative branch, and that there exists
power of review of those laws save the creator of them is qui
worthy of attention.

The value of a constitution as found in the United States a
the influence of that written instrument in specifically setting for
what the government is, should be demonstrated. The fact that sin
the creation of our own Constitution the nations of Europe, sa
Russia and Turkey, have to a greater or less degree formulated
definite fundamental law, and also how, under the operation of o
own fundamental law we have found in the three departments, exec
tive, legislative and judicial, a constant check, one upon the oth
are elements of great use in this grade.

Information of the character of these European governme
can be found in any cyclopedia, and the scheme of presentati
must vary with the class; but this fact ought to be constantly ke
in mind that in governmental life this nation has been an exam
to all the nations of the earth along the line of trusting to the g
erned the direction of their own affairs.

The pupil of this grade is patriotic, and it is in this connecti
that patriotism can be taught. Considering the cosmopolitan ch
acter of New York schools, the duty is ever present of showing
the language of the late William H. Seward, "It is not sufficie
that the citizen shall conceive his country to be great, but he m
know why it is so and whether the privileges he enjoys will
those of his posterity as well." Here, then, is the place to sh
why the system of government under which we live is better th
that of any nation of Europe, and the tendency of European natio
to adopt our methods is proof of this. In further proof of this

the unrest of the people of the European nations. Within our borders we find immense opportunities for accumulation, wider openings for the native genius of the people, and conditions that to the very poor give greater hope then elsewhere in the world. In this sense, the United States has had sufficient land for her own needs. The domain has been ample and no attempt has been made to acquire possessions elsewhere. The nations of Europe by reason of their increasing populations, have sought colonies at distances more or less remote from their shores, and every nation of Europe has possessions, in many cases, of greater magnitude than its own immediate area. A list of these should be prepared and their importance as a safety valve to the enlarged desires of the people for opportunities not granted at home fully brought out. They become necessary and are a source of profit as well as an outlet for surplus populations, giving a freedom to the individual citizen not known under the home government in a lessened tax, a less restrictive government ontrol and an opening for that accumulation which is the incentive o continued effort.

The study of social life requires an inquiry into the educational dvantages and the teacher must gain his information from such ources as he may possess. Those nations of Europe which spend arge sums of money for education, which insist on compulsory ttendance at school, and which show an intelligent interest in the pread of information among its subjects are to be grouped together. lliteracy and squalor are companions. Lack of educational advanages and a discontented people have a direct ratio, and, in making his comparison, the number of schools, colleges, libraries in the various countries compared with those in the United States is worthy of a detailed statement. How the system of education is organized in the various nations of Europe, what percentage of the people can neither read nor write and what provision the State makes for compelling attendance are factors of great interest in this branch of the subject. The relation of the Church to the instruction of the people and the prevalence of newspapers as well as the tendency of the great middle class to place itself in the material life of the country are all evidences of the desire of the State to seek the betterment of the governed. The teacher must show where this is successfully accomplished.

The industrial and commercial progress of the nations of Europe as compared with those of America is a matter of figures, but they have elements of interest which will hold the pupil's attention. Information of the nations of Europe must be sought everywhere. The census report shows a vast variety of information concerning the material progress of the United States. No department of trade has been neglected, and the carefulness of the investigation is a guarantee of its accuracy. Customs reports, consular reports made to the State Department will give the nature of the business of the people in the

Geographical Journeys.

By Charles F. King, Principal Dearborn School, Boston.

Dearborn School, Feb. 13, 1899.

Dear Prof. Meleney:

I enclose my little contribution with the following explanation:

The great need at the present time in order to improve the teaching of geography is an appeal to the ceaseless activity of the children. Give them something to do and they will be interested. Besides the making of maps let the teacher set the pupils to work on journeys, topics and comparisons.

I have, therefore, prepared the outlines for two journeys to be written out, and to help the teacher more, have given all needed material for the third trip. This has been condensed from reading over a dozen books and as many magazine articles.

Much greater interest is aroused in the upper classes by studying two countries at the same time. I have written out some hints of how this might be done.

Yours truly,

C. F. King.

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6 A.

"The Journey Method" never fails to interest children in all grades. Supply the pupils with blank-books in which to make a rival text book, or to record imaginary trips.

Outlines of a few journeys are given below as suggestions.

(*a.*) Quebec, or the Northeast to Portland, Oregon, or the Northwest.

Take the trip overland by two different routes. The different routes may be assigned to different portions of the class.

Make prominent in these trips interesting facts about the railroads traveled, cities and states passed through, rivers and mountains crossed, difference in climate experienced, comparison in scenery on the way, of productions and industries in the East and in the West. Consult geographies, "Scribner's American Railroads," "Picturesque Readers Nos. 3, 4 and 5."

(*b.*) A trip from Montreal to Mexico can be taken in three ways:

1. By rail, to New York, to Chicago, to St. Louis, to El Paso, and then to Mexico, speaking of the cities passed through, sights

seen on the way; and, lastly, comparing the people and home life in Canada and Mexico, owing to climatic and race differences.

2. Mostly by water through the St. Lawrence River and the Lakes to Chicago; by rail to St. Louis, down the Mississippi River to New Orleans; by steamer to Vera Cruz, and by rail to Mexico. Make prominent this time the bodies of water traveled, and then home life, etc.

3. By the St. Lawrence River, Atlantic Ocean and the Gulf of Mexico. Name countries, states, capes, seaports, etc., passed. Consult Baedeker's Guide Book of the U. S., Ober's, Brocklehurst's Geiger's, Gooch's and Smith's works, and Picturesque Reader No. 2.

(c.) A trip from New York to the West Indies.

Consult for facts books written by Hill, Hazard, Steel, Hearn, Ober, Clark, Davey, Ballou, Goodman, Kingsley, Froude, and the leading magazines.

The following epitome of facts is given to save teacher and pupils time. These may be read by the teacher to the pupils and the latter requested to make notes for use in a letter, facts and imagination being pleasantly intermingled.

WEST INDIES.

The West Indies consist of these divisions, viz:

1. The Bahamas—700 islands opposite Florida.
2. The Greater Antilles—Cuba, Jamaica, St. Domingo, Porto Rico, etc.
3. The Lesser Antilles—21 small islands which extend in a gentle curve from Porto Rico to South America.

The first stopping place may be Nassau (20,000), Bahamas (Eng.). Water in the harbor wonderfully clear, every pebble, shell, fish, crab, branch of coral distinctly seen. In one place sea-gardens on the bottom of the harbor may be seen from boat; the delicately tinted sea-flowers, sea-anemones, purple sea-fans, fishes of the most brilliant hues moving among them all. At the pier negro boys amuse the visitors by diving for coppers. Nassau is a great winter resort; country very flat. Climate warm in mid-winter. The colored folks clean and tidy, living in picturesque wooden huts thatched with palmetto. Very noted silk-cotton tree here.

Second stopping place—Havana, Cuba (200,000), in Greater Antilles (formerly Spanish).

This city lies south of Tropic of Cancer, 90 miles from Key West.

The approach very beautiful; splendid harbor, three miles i circumference, deep water; on the left, foliage-covered land, wa ing palms and banana trees, Morro Castle; to the right, the cit and Fort La Punta; the harbor alive with shipping. The city on low plain only a few feet above the sea.

In Havana most of the streets very narrow, sidewalks only tw feet wide. Exceptions—three handsome wide streets, one wi villas on each side and fine gardens; once, a fashionable shoppi street. Ladies shop without leaving their carriages. The third the Prado, a fine promenade, well lighted; celebrated Botanic Gardens and avenue of cocoa palms unsurpassed.

The stores in Havana are not numbered, but have some fancif names such as "The Pearl of Cuba," "Sea Foam," "Thin Precious."

Small horses laden with baskets of fruit, sugar cane, etc., a frequently seen on the streets; also long teams of oxen yok together by the horns.

Most of the better class of houses built of conglomerate of se shell, very white; one story high; upper half of house whi lower part dark blue, a deep red or a vivid yellow; outer doo always open; windows without glass but barred, the bars paint in bright colors. Most houses have open courts or patios with with trees, flowers and shrubs. The rooms are arranged aro this court; have no carpets, no chimneys; have Venetian blin instead of glass in the windows.

Cuba equals in area the State of New York. Is called "Que of the Islands," "Pearl of the Antilles." Surface of the la diversified. Has a favorable tropical climate. Two seasons, d and wet, the latter from May to October, very damp as a whol rain brought by the trade winds. Coldest month, January; warmes August. Rainfall generally in the afternoon. Constant summe no snow. The coldest day in Havana about 50 degrees; warmes about 100 degrees. Winter months delightful. Mosquitoes an sandflies common pests.

There are four types of people, viz: Spaniards, who emigrate from Spain; Cubans, their descendants, who own the land; Negroe one-third in number; and Chinese small in number. The latter tw races do the work.

Cuban women are often handsome, with dark complexions, bi black eyes, hair chestnut or blue black, and fine teeth; are merr but not great workers. The men are thin, have thin hands, sha features, swarthy complexions and intelligent eyes. Both men an women like to dress well and go to the opera. The Cubans a called cruel from their harsh treatment of horses, oxen, dogs, fow and maniacs. Cock fighting is always common on Sundays; mone is always bet on the results. The Cubans do not dislike t Negroes. The latter are happy, laugh and dance, but live in filt have the growing estrangement of Norway from Sweden, and the desire of the former to become a republic.

If the teacher will take as his yard stick the aphorism, "That government is best which governs least," and apply it to the nations of Europe, making due allowance for racial differences, climatic changes, religious affiliations and commercial as well as physical advantages, he will find that those nations which trust to the intelligence of the people will take the front rank, and in this category must be placed, England, Switzerland, France and Germany.

It is not presumed that this covers the work of the 7th grade. It simply suggests a line of investigation. The work of the grade offers large opportunity for individual research, and for collateral eading of a very interesting character. It furnishes a most excelent opening for the demonstration of the fact that the United States s the first nation in wealth and in material prosperity, and that this s so by reason of the peculiarity of its situation, its development, ts characteristic form of government and its material resources of wealth in fertile fields, in mineral products, the elevating trend of ts people and generally contented condition of its citizens.

Agriculture is well established. Fruit now largely raised for the American market. Cattle graze under the shade of allspice trees. The Blue Mountain coffee is famous; shipped to England; not a berry consumed on the island, it is so valuable. It grows high up on the steep slopes facing the sea.

Area of Jamaica is 1-10 that of Cuba. Blacks outnumber the whites four to one. Blacks have little houses surrounded by fields, on which they raise yams, sweet potatoes and corn. On market days the roads are blocked with the negroes carrying on their heads large baskets of fruit, vegetables or eggs. The women do much of the hard work usually considered as belonging to the men.

A short distance east of Kingston is Port-au-Prince (29,000), in the Republic of Haiti, Island of San Domingo, (The Black Republic).

P. is a beautiful city. It has broad streets well laid out by the French, but utterly neglected. The environs of mountains and plains are enchanting. The gutters are in the center of the streets. Houses poorly built of wood. The great curse of the city is fire. It has all been burned up in the last 25 years and rebuilt.

The manners and customs are French. The president of the Republic is chosen for seven years. The president and the army rule. The people are devoted to Freemasonry and love pomp. There is a strong hatred between the Blacks and the Colored People.

San Domingo City (25,000) is the principal city in the eastern end of the island of the same name. (Independent with constant revolutions). Area of the island two thirds that of Cuba. In the center of the Greater Antilles. Excels the others in altitude, picturesque aspect and natural fertility. The mountains seen from the sea appear to come down to the water's edge and to be covered with shrubs and trees. The Indian name "Hati" means mountain. Highest peak 10,000 feet. Mountain regions well adapted to coffee; this island has the best sugar lands in the W. I. Tropical fruits grow everywhere.

St. Domingo City is a fine specimen of an old Spanish city surrounded by a wall. The streets are narrow.

The people are largely dirty negroes. The natives claim that Columbus is still buried in the old cathedral, and that his son's bones were the ones carried to Havana and then back to Spain.

The next point of interest may be San Juan (25,000). Capital of Porto Rico (now belonging to the U. S.). Porto Rico means rich port. Like Jamaica, it is very mountainous. The interior is a vast sea of rounded hills. The slopes of these hills are so gentle they can be cultivated to their very summits. Many rivers large and small; bananas and plantains are wonderfully prolific. Eighty-seven per cent. of the people are illiterate.

Ponce on the southern side is the largest and most elegant city, and is connected with the capitol by a good road.

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The stores in Havana are not numbered, but have some fanciful names such as "The Pearl of Cuba," "Sea Foam," "Things Precious."

Small horses laden with baskets of fruit, sugar cane, etc., are frequently seen on the streets; also long teams of oxen yoked together by the horns.

Most of the better class of houses built of conglomerate of sea-shell, very white; one story high; upper half of house white, lower part dark blue, a deep red or a vivid yellow; outer doors always open; windows without glass but barred, the bars painted in bright colors. Most houses have open courts or patios within with trees, flowers and shrubs. The rooms are arranged around this court; have no carpets, no chimneys; have Venetian blinds instead of glass in the windows.

Cuba equals in area the State of New York. Is called "Queen of the Islands," "Pearl of the Antilles." Surface of the land diversified. Has a favorable tropical climate. Two seasons, dry and wet, the latter from May to October, very damp as a whole, rain brought by the trade winds. Coldest month, January; warmest, August. Rainfall generally in the afternoon. Constant summer, no snow. The coldest day in Havana about 50 degrees; warmest, about 100 degrees. Winter months delightful. Mosquitoes and sandflies common pests.

There are four types of people, viz: Spaniards, who emigrated from Spain; Cubans, their descendants, who own the land; Negroes one-third in number; and Chinese small in number. The latter two races do the work.

Cuban women are often handsome, with dark complexions, big black eyes, hair chestnut or blue black, and fine teeth; are merry but not great workers. The men are thin, have thin hands, sharp features, swarthy complexions and intelligent eyes. Both men and women like to dress well and go to the opera. The Cubans are called cruel from their harsh treatment of horses, oxen, dogs, fowls and maniacs. Cock fighting is always common on Sundays; money is always bet on the results. The Cubans do not dislike the Negroes. The latter are happy, laugh and dance, but live in filth.

Humboldt says that the whole of Cuba was once a forest of palms, limes and orange trees. The royal palm is a marvel of beauty and utility. It is very common. Its leaves resemble a cluster of enormous plumes. The Cuban obtains from it boards, food, salt, plates, kettles, roofs, etc. Cocoa-nut palms make a lovely grove with their rich varied color.

Tobacco is grown mostly in the provinces west of Havana, or in the "lower valley." The soil and climate produce the best in the world. First grown from seed which is transplanted. If sown in June, gathered in December. Negroes do the work but white people are needed to make the cigars.

Some of the large sugar plantations are near Matanzas, in the beautiful Yumurri valley. The sugar harvest begins late in January and ends in May. Cane is grown from slips taken from the top of the plant. Grows in six months to maturity ; is from six to sixteen feet in height; when ripe the canes are of a pale green color. The men cut the stalks, the children pull off the leaves, the women tie in bundles. It is carried from the field to the rolling mill in ox carts or by narrow gauge railroads. The mills in sugar time work day and night. The juice must be immediately boiled or it turns acid and spoils. Much capital is needed now to make a profit in sugar raising, because so much machinery is required.

Near the eastern end of Cuba is the lovely harbor and city of Santiago. The situation is ideal. Morro Castle, where Hobson was imprisoned, is picturesquely situated at the mouth of the Santiago River. There are many gardens in Santiago full of flowers whose perfume can be perceived from the ships in the harbor. The water in the harbor is often phosphorescent. The place will always be connected with the surrender of the Spanish army to the United States in July, 1898, and the destruction of Cervera's fleet in the same month.

3rd Stopping Place. Kingston (46,000), Jamaica via Windward Passage (English Colony). A very unattractive place, houses of yellow brick with jalousies or Venetian blinds. Suburbs are high up and delightful. The people do not live in cities, but in towns or villages. The best way to see how they live is to drive through the country. Roads most excellent everywhere; one good road around the island in view of the sea under miles of cocoanut palms. English-looking houses and villages, English flowers, vegetables, cattle, manners. Neat stone walls, comfortable homes, delightful excursions to the summit of the Blue Mountains. The scenery is only surpassed by that of the Tyrol, which it resembles. Has many lovely rivers, good supply of water, good sanitation. The temperate climate on the sides of the mountain and absence of yellow fever make it a very healthy country.

CHINESE.	JAPANESE.
Ancient.	Modern.
Generally slow.	Generally quick.
Generally steady.	Generally fickle.
Usually dislike foreigners.	Learn from foreigners.
Mostly hand-work in manuf'g.	Machinery largely used.
Very reliable in business.	Not as reliable.
More Chinese in Japan (than)	Japanese in China.
Have few railroads.	Have many railroads.
Peaceful.	Fighting.
Continental.	Insular.
About 400,000,000 in population.	About 40,000,000.

Japan owes all her literature to China. All Japanese who aspire to be scholars must study Chinese. Chinese reliable. Great foreign houses in Japan all have Chinese in positions of trust and responsibility. Rating of merchants of the nations on Bourse of London for commercial integrity: 1. China, 95; 2. Holland, 90; 3. England, 85; 4. United States, 80. Japan is 7th.

San Juan is on island connected with the main land by a bridge and courseway. It is a perfect specimen of a walled town. The houses are near together and are painted in pink, gray, blue, yellow, any color but white. They have no chimneys, no cellars, no need for either in the W. I. Insect pests are numerous. The climate hot and humid.

Cock fighting is the national sport. Fighting cocks may be seen strutting up and down the side walk, taking their airing and uttering crows of defiance. A good bird is worth from $10 to $25. The native huts are very rude affairs. The commerce of the island is chiefly with the U. S.

Continuing the journey southward the voyager passes among the wonderful Caribbee Islands. Ober says of them as a whole: "The C. I. possess every variety of climate between the temperate and the tropical, and every beautiful aspect of vegetation from the sugar-cane of the coast, to the feathery tree-fern of the cool and pleasant woods, with their giant trees and tangle of vines and bush-ropes."

About in the center of this wonderful chain of islands stands Martinique, (French), the most picturesque and interesting of them all. It is noted for its mountains and wonderful forests. In the center the leaves and vines are so near together that no human being can penetrate within; even the light of the sun is kept out.

There are three seasons, Spring, Summer and Autumn.

This is a favored colony of France and is represented in the National Assembly.

The food stuffs of the U. S. are absolutely necessary, but we take nothing in return; all the productions go to France. One-fourth of the revenue is devoted to education. There are good highways. St. Pierre is the principal sea-port and city (25,000). It has an interesting creole population The houses are stone built, roofs of red tile. Many drinking fountains in the streets. Swift streams course from the hills and flow through the gutters of the streets. The garbage of the place is thrown into the water in the gutter, dishes are cleaned in them, babies are washed there, held by the hair or girdles to prevent them from being carried away.

St. P. was once noted for its Botanical Garden, now somewhat neglected.

Native women noted for their perfect form, great strength and erect position. They all carry burdens on the head. The Empress Josephine was born on this island.

Just south of Martinique will be seen St. Lucia, noted for possessing a very deep landlocked harbor. The English are making here a most formidable naval station. Why? Barbadoes is not so hilly as the other islands. It is the gayest place in the W. I. Balls, dinner parties, and picnics are constantly enjoyed. Lawn tennis parties are held in the charming gardens in the cool of the evening. The land is well under cultivation.

The Topical Method.

The topical method of teaching and studying geography always arouses deep interest. In studying So. Am. make prominent the following topics: Elevations, drainage, productions such as rubber, coffee and wheat. Compare the climate of Brazil with New York. Compare the mountains and rivers of So. Am. with those already studied in No. Am. Show similarities and differences. Study in detail about the production of raw rubber and the growing of coffee, its export to U. S. and other countries. Consult Reclus, Humboldt and Whymper, for the mountains; Agassiz, Keller, Kingston, Page, Vincent and Marcoy, for the rivers, manners and customs; consular reports for productions, industries, &c. Vincent's is a good general book. Compare Chili with the Argentine Republic, Brazil and Mexico; compare the Amazon and the Mississippi Rivers.

Asia and Africa.

There is great advantage in the upper grades, in studying an in reviewing, two grand divisions together. Use a well-chosen lis of topics. Compare and contrast constantly.

Observe on the map the difference or similarity in size, sha and position between the above grand divisions, one triangular, o rhomboidal. Asia is one-half larger than Africa, but its coast li is more than twice as long. One coast line is regular, the oth irregular. One is north of the equator; one on both sides. Gre est length of one north and south; greatest length of the oth east and west.

One has few outlying islands; the other so many that the form a fringe and enclose many border seas.

Asia is exposed to three great oceans and receives from them vast amount of moisture. Africa is cut off in the northern pa from moisture, but has plenty in the southern part from the India Ocean alone.

The Desert of Sahara has a very small amount of rain; Burma in Asia, the most of any place in the world. The Lena Delta is on of the coldest places in the world; Africa has some of the hotte places.

One river in Africa flows north—the Nile, most celebrated an peculiar of rivers, flowing into the warm Mediterranean Sea. Thre in Asia flow north into the frigid Arctic Ocean. Contrast the mouths. The great rivers of Asia are in pairs or triplets; those Africa are isolated. Contrast the well-behaved, calm and peace Blue Yang-tse-Kiang with his unruly, boisterous, mad and c

United States was educated in London, and practised for years as a lawyer in the British courts at Hongkong. The Minister to Great Britain is another educated man, who speaks English well.

The progressive young mandarins are advocating the adoption of western studies and western methods by the government. They have an organ published at Shanghai, and called "China's Progress," which is very extensively read, and is wielding great influence.

Dr. W. A. P. Martin has responded to the call of the government to reorganize the University at Peking after the pattern of the best western institutions: and the high mandarins in the provinces are urged to establish colleges, and introduce scientific studies everywhere. Meanwhile, the schools and colleges established by American and English missionaries are crowded with students coming largely from the better classes of the people. English, mathematics, physics, philosophy, are all in great demand.

The institution of the Nanyang College at Shanghai, under official auspices, with Dr. J. C. Ferguson, an American, as President, is a further indication of the educational awakening among the governing classes.

Another powerful factor in this movement is the history of the recent war with Japan, published by Dr. Young J. Allen, at Shanghai, with running comments and additional chapters, pointing out China's errors in the past, and her true course for the future. This book has had careful reading in the imperial palace, and among the highest mandarins.

The political situation at present is exceedingly complicated. Russia has long had a covetous eye on the northern provinces. Her acquired hold upon Port Arthur is ostensibly for the purpose of having a terminus for her Siberian railway at a port that will be open all the year, her Siberian ports being closed in the winter. But it is sufficiently obvious that she will not neglect any good opportunity to extend her "area of influence" indefinitely.

France is watching her opportunity to get a valuable slice in the south; Germany is not averse to extending her acquisitions; Italy, although having but slight commercial interest, is making her demand.

Meanwhile, what is England about? When the Russians seized Port Arthur, she promptly got possession of Wei-hai-wei, a much more valuable position for commanding the bay of Pecheli. But England does not wish further territorial aggrandizement in China. She does desire a wide open market, and will work to make it sure. If she can prevent the other European nations from disintegrating the empire, she will; and she is often wide awake when she seems to be asleep. Her long habit of being heard from effectively at critical moments is likely to continue.

There can be no doubt that the true interests of the United

States are identical with those of England in this matter. We not want any of Chinese territory ; but we do want a free and op market where our productions will soon be in greatly increas demand. The opening of coal mines, the building of railroads, t development of the great mineral resources of the country, w afford a fine field for American enterprise.

If it be asked, but what if dismemberment proves to be inev able? Why then, of course, England will take her share, and will probably be right through the centre, along the rich valley the Yang-tse. But a far better solution of the problem of to-d will be for the Chinese government to set in progress a compl reform in all departments, after the manner of that so well acco plished by Sir Robert Hart, the able Irishman who has been so lo at the head of the Customs service. This can best be done unc the auspices of England, whose commercial interests are far advance of the other European nations, while our own are seco only to hers.

Our teachers ought to give careful study to the recent history China, and watch her development along the lines that have be here indicated. It will be one of the most useful services they c render to the young people under their instruction to set them thinking about and investigating the present condition of China a its probable outcome. It would be well to require papers from th on these subjects. For China will soon begin to play a very impo ant part in the world's history ; and with her vast resources, awa ing development, and her teeming and industrious population, w command the attention and interest of the civilized world.

China At The Close Of The Nineteenth Century.

By S. A. Baldwin, D. D., New York City.

To every thoughtful student of mankind, the empire of China presents a very important field for investigation. A country with an unbroken history stretching over four thousand years, with a population of four hundred millions, and a fertile domain embracing every variety of climate and scenery, must, of necessity, hold a place of commanding interest.

Its people are homogeneous, and have many traits of character which are commendable. Among them may be named :

1. Their reverence for parents and for aged people. This is very marked, and has had a wholesome influence. While in some respects it has been carried to an extreme, leading to the notion that all that is good and desirable comes down from the ancestors of the past, and that the highest wisdom is to conform to their teachings and their practices; yet, on the other hand it has had a steadying effect upon the national mind, keeping the people reverent toward authority, and has undoubtedly been a powerful factor in prolonging the national life.

2. Their industry. Beyond all question they are among the most industrious people in the world. No nation presents a better example of a people all at work, always at work, and working cheerfully. When this can be truthfully said of any people, it can be confidently affirmed that they must constitute a valuable and useful part of the world's population.

3. Their regard for learning. Through the centuries they have put the scholar at the head of society; and the road to learning has been open to all. No man has been denied a chance on account of his lowly origin. The only question is, can he stand his ground in competitive examination with the other students. This reverence for learning extends to the letters themselves, so that no printed page must be trodden under foot or used for any ignoble purpose. It is true that limiting the scope of education to the writings of the early sages has had a dwarfing effect. Nevertheless, it is greatly to

the credit of the Chinese that they have given such an honorable place to the student, and it affords a solid basis for hope in regard to the future, when all the important studies shall be introduced.

4. Their mercantile integrity. The universal testimony of foreign merchants dealing with the merchants of China is that their word is as good as their bond, and that in transactions running up into millions of dollars on verbal contracts alone, they have been found entirely reliable, and not a penny of loss has been sustained in these large dealings. For many years they have been rated on the bourse of London at the head of the dealers of all nations for commercial integrity.

Keeping these things in view, let us take a survey of the present condition of affairs in China. The nation has been very slow to come into cordial relations with western governments. The conservatism of centuries had inured them to hermit notions. "China for Chinese, and let the foreign barbarians keep to themselves," was the common sentiment of government and people. The successful attack of the allied British and French armies in Pekin in 1859 opened the eyes of many leading mandarins to the prowess and power of the western nations; and the rapid progress of the Japanese in adopting western ideas led some of the most acute o the high officials to devise a new departure for their country, an to take measures for instituting it. They had much to conten with; but about thirty years ago they succeeded in having 1 Chinese lads sent to America under government auspices for educ tion. The Hon. Yung Wing, himself, a graduate of Yale Colleg had been very earnest for this reform, and was put in charge of t young men who were sent here. They were distributed among t common schools of Massachusetts and Connecticut, residing, ge erally two by two, in respectable families. When fully prepar they were sent to Yale, where they held good place among o American students, and acquitted themselves well.

Unfortunately, when they were about half through the fifte years they were to spend in this country, the conservatives cam into power, raised the cry that the young men were becomi Americanized, and ordered them home. Many of them were em ployed in different departments of government service, and a num ber returned to private life. When the French attacked Foocho in 1884, some of these young men were in charge of the Chinese gu boats, and fought with great courage.

The abrupt ending of this educational plan is greatly to regretted; but the awakening of the Chinese mind has continue Individuals and occasionally groups of Chinese young men ha been going to America, England, France and Germany for educ tion. Some of them have come rapidly to the front, and are no filling important foreign missions. The present Minister to th connecting these centers of trade, and the exports and imports with allied routes. Cross section maps may be made of great advantage in fixing relative heights and depressions.

The absolute monarchies of the East offer a fine comparison as to power and influence with the republics and limited monarchies of the West, and the freedom of the individual in his relation to man and society should be particularly made prominent. This comparison will lead almost naturally to the decreasing power and influence of the Eastern monarchs and the correspondingly increasing power of the Western rulers and the reasons why such is occurring.

The study of the governments, dependencies and social development opens up at once a vast field—one which to be properly studied requires us to correlate with the ancient history of such nations as India, China, Arabia, Egypt and Palestine, to dwell at length upon their civilization and its development, the life and growth and government of these nations, and leads finally to the study of Civil Government of our country. Here also springs up the study of the races of mankind and the religions of the world, and we naturally turn to the countries of Asia for the birth-place of the human race. A brief description of the principal features of these races and religions will suffice.

INDUSTRIAL GEOGRAPHY.

A comparison of the amount of manufactured articles will show that the United States surpasses all other countries in this line. The majority of our manufactured articles, however, are consumed in our own country, while with most foreign countries much is exported. It should be pointed out that those countries excel in manufactures which possess abundant water power, have good means of transportation together with great wealth and population. A good chance is here given to compare the inventive ability of the people of the United States with that of the foreign countries studied.

The measure of a nation's greatness has well been said to be its domestic and foreign commerce. A comparison of the domestic commerce of nations will show that the United States exceeds every other nation on the face of the globe, while in our foreign trade, although our situation would warrant an immense export trade, we rank only fourth. In general it may said that a nation exports that which it produces in abundance and which is required by other nations, and imports what it is unable to produce or does not raise in sufficient quantity to supply home demands. The greater part of our export trade will be found to be with the nations of Europe and this consists largely of breadstuffs, cotton, dairy products, coal, iron and petroleum, while we import mainly sugar, tea and coffee, tropical fruits and spices, and manufactured articles of wood, silk and leather.

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these great movements and their effect upon the commercial relations of the world may be drawn from the student and errors of judgment corrected by the teacher. Maps, illustrating the various ocean trade routes and kept constantly before the class, will firmly fix in the minds of the pupils what countries and what cities are the great export and import centers of the world. Railroad maps, which may be obtained for the asking, will give a clear insight into our great industrial trade and lead directly to a comparison with the other countries of the grade. They will clearly demonstrate the progressive character of our own country and at the same time show the non-progressiveness of the countries of Asia and Africa where Western civilization is just obtaining a footing. A comparison of our channels of trade with the old caravan routes of Asia and Africa still in use, will certainly prove of interest and the reasons why railroads have not been introduced to any extent in these countries deduced. The fact that South America has shown a most progressive spirit may be attributed almost entirely to the influx of Americans and English with the necessary capital. It should be our duty to point out that the construction of the great railroad systems in the majority of foreign countries is primarily for military purposes, while trade is but a secondary matter. The reverse is true of our own great systems.

The restriction of travel and its consequent peril to Europeans in Asia and Africa and the reasons therefor, cause us to revert to the absolute character of the governments of the natives of these continents, and, in a way, open the way for the pupil to reason why emigration has been tending to the Western world. Other reasons for emigration, the character of the emigrants, and the general effect of emigration upon our government and our peoples offer a very large field for individual study.

The study of the principal cities can best be obtained in connection with commerce and trade routes. The location of these commercial centers in the country as determined by longitude and latitude, their direction from cities of their own and foreign lands, the reasons for their greatness, how they are located with regard to waterways and commercial routes, the character of business engaged in, their size and the climate as affecting the character and business of the inhabitants will all give the pupil a broader idea as to the reasons why cities are built, grow or decay, and remove his impressions as to the number and size of the dots on the maps.

As a craving for knowledge is one of the principal aims in education, a good library of travel will add to the interest of the pupils, will cultivate in them a desire for good literature and create a thirst for geographical knowledge. Every class should therefore have a well-supplied library of prose and poetical works on geographical subjects, and when these cannot be obtained, our newspapers and magazines furnish us with, at least, a good partial substitute.

but many of the marked physical resemblances, the continuity of mountain systems, the formation of watersheds, valleys, plains and alluvial districts may be drawn from the child after a careful study of the globe itself. By this means, we are causing the pupil to critically see, to mathematically judge, and to logically reason, always keeping before him the character of rotundity of the earth and the relative locations of the countries and continents.

With regard to the products we cannot impress too strongly upon the student that wherever we find certain states or conditions of climate, together with a characteristic condition of soil, certain products result, no matter which the continent may be. In other words, we must endeavor to make him forget many of his memorized products and to have him learn for himself that products are largely dependent upon the soil and the climate which in turn is dependent upon latitude, trade winds, etc. A continued study of the globe will lead him, in many instances, to draw his own conclusions as to the character of many of the prominent river systems, by comparing them with those of his own country, estimating the purpose or use to which they are employed by their nearness or remoteness from their mountain sources, their length and the rapidity of their fall to the sea. With this data, taking into consideration the people of the country, he may be led to see why certain manufacturing interests predominate, why certain products are exported, and why particular routes of trade are followed.

To strengthen the memory and to aid the imaginative power what might be termed "progressive memory maps" should be drawn. By memory maps, however, it is not meant that the student should be able to produce when called upon any country or continent from memory. The maps to be drawn should be placed before the class, the trend of the coast line and any specially prominent features pointed out by the teacher, and the child allowed obtain a visual impression. Then the map should be rolled up, and after waiting a short time to allow the impression to be fixed, the pupil is asked to reproduce what has just been before him. When the rough general outline has been finished, pencils are put down and the work suspended. The map is again brought into view and the pupil asked to compare his sketch with the map, noting the corrections to be made. Once more the map is rolled up, pencils are taken and the necessary corrections made. Having finished the outline of the map, the generally accepted theory of the early condition or state of the world may be briefly dwelt upon. The student then locates and places on the map in natural order, the formation of mountain systems, the climate as influenced by prevailing wind currents and latitude, the formation of river systems, the inhabitants causing political divisions, the vegetable and animal life, the mineral resources, the occupations of the inhabitants, the centers of commerce resulting from occupation and products, the railroads connecting these centers of trade, and the exports and imports with allied routes. Cross section maps may be made of great advantage in fixing relative heights and depressions.

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Although we rank but fourth in exports historical events have occurred within the past few months which tend to greatly enhance our export trade and place us commercially on the same level with Great Britain. The acquiring of Porto Rico and the Philippines, with at least a nominal control over Cuba, has opened to us a new avenue of trade. These countries produce naturally all the articles of the tropics that we import from foreign countries, and, as they manufacture little or nothing, our manufacturers will be greatly benefited.

With Porto Rico and Cuba we have undoubtedly the stepping stones to the great trade of South America and the West Indies—the trade which the late James G. Blaine endeavored to divert from Europe by means of the Pan-American Congress. Similarly in the Pacific our trade will receive an increased stimulus, for as with Porto Rico and Cuba in the Atlantic, the natural products of the Philippines, now controlled entirely by foreign trade, will open a new outlet for our manufacturers, and by means of these islands we stand in a good way to control the immense trade of the Chinese Empire and the East Indies. The control of these islands opens to our commercial interests a new world, vaster than ever Columbus dreamt of, and one which will tend to the rebuilding of our merchant marine. These points should be brought strongly to the pupils' attention. Whether, politically, it is a good move on our part to annex this territory, it is hardly within our province to discuss. If however, we enter into any discussion of the subject, it might be well to refer the pupils to similar conquests or purchases by the United States in times past. Exactly similar objections were advanced against the purchase of Louisiana in 1803 as are now advanced by the opponents of annexation, and even then the dread of dissolution seemed to have taken fast root, for no less a person than John Quincy Adams declares this purchase "a direct, unqualified, admitted violation of the Constitution," and states "time only would determine whether the Union would not finally be dissolved by this enlargement of territory." The consent of the governed was not taken into consideration then, nor at the purchase of California and New Mexico, or Alaska, and we would only be following a well established precedent by forcibly annexing these results of ou conquest. There can be no doubt, however, but that the results o our short and decisive war with Spain will raise us politically an commercially in the eyes of the nations of Europe and tend to ai in the extension of Western civilization to the barbaric East.

The dismemberment of China, owing to the weakness of t present monarch, the gradual extension of the power and influen of both Russia and England outside of the Chinese Empire in Asi the division of Africa among the principal powers of Europe and t attempted joining of the English dominions throughout Africa, offer food for class room study and discussion. The reasons these great movements and their effect upon the commercial relations of the world may be drawn from the student and errors of judgment corrected by the teacher. Maps, illustrating the various ocean trade routes and kept constantly before the class, will firmly fix in the minds of the pupils what countries and what cities are the great export and import centers of the world. Railroad maps, which may be obtained for the asking, will give a clear insight into our great industrial trade and lead directly to a comparison with the other countries of the grade. They will clearly demonstrate the progressive character of our own country and at the same time show the non-progressiveness of the countries of Asia and Africa where Western civilization is just obtaining a footing. A comparison of our channels of trade with the old caravan routes of Asia and Africa still in use, will certainly prove of interest and the reasons why railroads have not been introduced to any extent in these countries deduced. The fact that South America has shown a most progressive spirit may be attributed almost entirely to the influx of Americans and English with the necessary capital. It should be our duty to point out that the construction of the great railroad systems in the majority of foreign countries is primarily for military purposes, while trade is but a secondary matter. The reverse is true of our own great systems.

The restriction of travel and its consequent peril to Europeans in Asia and Africa and the reasons therefor, cause us to revert to the absolute character of the governments of the natives of these continents, and, in a way, open the way for the pupil to reason why emigration has been tending to the Western world. Other reasons for emigration, the character of the emigrants, and the general effect of emigration upon our government and our peoples offer a very large field for individual study.

The study of the principal cities can best be obtained in connection with commerce and trade routes. The location of these commercial centers in the country as determined by longitude and latitude, their direction from cities of their own and foreign lands, the reasons for their greatness, how they are located with regard to waterways and commercial routes, the character of business engaged in, their size and the climate as affecting the character and business of the inhabitants will all give the pupil a broader idea as to the reasons why cities are built, grow or decay, and remove his impressions as to the number and size of the dots on the maps.

As a craving for knowledge is one of the principal aims in education, a good library of travel will add to the interest of the pupils, will cultivate in them a desire for good literature and create a thirst for geographical knowledge. Every class should therefore have a well-supplied library of prose and poetical works on geographical subjects, and when these cannot be obtained, our newspapers and magazines furnish us with, at least, a good partial substitute.

57067C

History Grade 7 B.

By **John P. Conroy**, Principal Public School 39, New York City.

THE aim of the history work in this grade is to prepare for inte ligent citizenship and to inculcate a taste for historical reac ing; ends sought by a review of selected topics in the histor of our own country, before and during the Civil War; the study o our recent history in its relation to the recent history of Europea and Asiatic nations; and, lastly, by a study of the machinery o the State and the National Government, with a glance at the variou forms of aristocratic government.

The ground is extensive and requires on the part of the teache a nice selection from the immense mass of matter included, both a to kind and quantity, limited by the intelligence of the pupils an the time that can be given to it in the program.

As to the subject matter of the grade, the following sources o information may be drawn upon:

1. Review, selected topics to be found in histories. 2. Histor of United States since Civil War, as found in histories. 3. Brie summary of recent History of Europe and Asia, all in current lite ature, to be taught largely only. 4. Civil Government, from tex books in the list. 5. Forms of aristocratic government, in tex books, in most geographies, etc.

In the following outline the amount that may reasonably covered in the time allowed is indicated, with the sources of i formation, typical outlines, and methods of study and recitatio especially of that part not readily accessible in the ordinary te books.

The order in which the different divisions of the work are be presented is that in which they are laid down in the cou of study, as it is believed that a consideration of the matter show this to be a logical order of presentation.

First Month.—To be devoted to review of selected top topics to be presented in their entirety, so that a more exten view will be obtained by the pupil than is acquired in the work previous grades.

I.—TERRITORIAL GROWTH OF UNITED STATES.

Not only is this subject a matter of current thought, but consideration necessitates a review of much of our past, and puts the parts into relation. To quote Hinsdale: "If we follow the steps of this extraordinary territorial growth, we shall pass in review some of the principal forces that have acted in the national history, and also furnish an illustration of the organization of fact."

Analysis:

	Sq. Miles.	Dates.
Original Thirteen States,	820,000	1783
Louisiana Purchase,	875,000	1803
Oregon,	280,000	1792—1805—1811 1819—1846—1872
The Floridas,	64,000	1819
Texas,	260,000	1845
First Mexican Annexation,	615,000	1848
Second " "	45,000	1853
Alaska,	530,000	1867
Hawaii,	6,000	1898
Porto Rico,	3,500	1899
Philippines, etc.,	115,000	1899
	3,613,500	

Method.—The outline of the topic having been written on the blackboard, the parts of the class text-books in which the matter may be found should be indicated, and if not fully enough treated there, the additional information must be supplied by the teacher, or reference made to books in class, school, or other library, to which pupils may have access. While it is likely that only one text book will be in the hands of the pupils, a number of other histories by different authors should be at hand, which pupils may consult, and which they should be encouraged to read, so that the treatment of the same subject by different persons may be brought to their attention. Different divisions of the topic may be assigned to parts of the class.

The causes that led to the increase, the results therefrom, and the arguments for and against the acquisition are to be clearly brought out. The necessity for constant use of maps is apparent. Recitations to be oral and written, with insistence on accuracy of statement both as to fact and form.

References:

Hinsdale's "How to Study and Teach History." Gives details of cessions and general methods of teaching; Davidson's Reference History of United States; Channing and Hart's Guide to American History—Methods; Hart's Formation of the Union; Wilson's Division and Reunion; White's Outlines Studies of History United States—Methods; Louisiana Purchase, Review of Annexation by United States. Burger Hermann's Gen. Comr. of Land Office;

Washington, D. C., maps; sent on application; MacCoun's Historical Geography of United States; MacCoun's Historical Charts; Various class histories.

II.—The Monroe Doctrine.

Analysis:

1. Independence from Spain of S. A. Republics.
2. Holy Alliance (Russia, Prussia, Austria, France). When formed? Why?
3. Attempt to help Spain get back colonies.
4. Attitude of Great Britain—Canning—Adams.
5. Declaration of Doctrine—1823; Points of Doctrine—Effect.
6. Violation in Mexico—1861—1867.
7. Violation in Venezuela—1895—Cleveland.
8. Other attempts at violation, if deemed necessary.
9. Present aspect of question.

Treatment, as far as applicable, same as preceding topic.

III.—Slavery in United States.

Analysis:

1. When and how American slavery began. Opinion as to institution in Colonies before Revolution.
2. Compromise on account of slavery in Constitutional Convention of 1787.
3. Cotton-gin.
4. Missouri Compromise.
5. Abolitionists.
6. Relation to Mexican War.
7. Compromise of 1850—Fugitive Slave Law.
8. Kansas-Nebraska Bill.
9. Relation to Secession.
10. Emancipation Proclamation.
11. 13th, 14th, 15th Amendments.
12. Results in South following amendments.
13. Condition of freedmen now in South.

Treatment, as far as applicable, same as preceding.

References: Various school histories and those mentioned above.

The topics above analyzed will occupy the month, and have been selected for their relation to the development of our country, material and political, and because their consideration includes so much of our history before the Civil War.

IV.—Other topics, of course, may be selected instead of those given, and treated the same way, of which the following are suggested:

1. Causes, chief events and results of the wars in our history.

2. When, where, and conditions under which the following important documents were brought forth: Mayflower Compact, Declaration of Independence, Articles of Confederation, Ordnance of 1787, Constitution of United States, Washington's Farewell Address, Emancipation Proclamation.

3. Tariff.

4. Rise, leaders, and principles of great political parties in our history.

5. Confederacy and its Constitution.

6. Emigration and Immigration.

7. The administrations of John Adams, Jefferson, J. Q. Adams, Jackson and Lincoln, and the great questions associated therewith.

8. The Money Question.

9. The Civil Service Question.

10. Mechanical Development.

11. Abolition Movement.

For general methods of preparation and presentation of historical subjects, supplementary reading, suggestive topics, and list of references, see titles above mentioned and Report of Committee of Ten.

2D MONTH.

During this month the history since the Civil War should be covered. The administration should be taken up in chronological order, a topical analysis of each made, the relative importance of the events discriminated, and the connection of each administration with the preceding and the succeeding administration brought out. Recitations, oral and written. The various school histories supply all necessary matter, the treatment in at least one other than the class text-book to be considered.

3D MONTH.

In this period the summary of the recent history of the European and Asiatic nations may be covered. As no text-book on our supply list carries the subject to the present, the matter is to be prepared entirely by the teacher. The presentation is to be made in the form of "talks" by the teacher, with black-board analysis, use of maps, with careful discrimination of relative importance of events. The when, the why, and the where, of national movements to be clearly brought out. To get any abiding result, the analyses ought to be taken down by the pupils, with such notes explanatory of these as the teacher deems necessary. The following outline is suggestive, the topics being presented chronologically for assistance in the preparation of the connected summary for class presentation by the teacher. In this outline of the recent history of Germany, France and Italy, the year 1870 is taken as the starting point, because of the striking events occurring in that year in those countries, which so largely determined their course to the present:

The following summary of history of these countries will guide the teacher in the selection of facts to be presented or in his reading on the subject:

FRANCE.

1870-1871. Franco-Prussian War; cause; leaders; chief events; treaty of Frankfort; terms; Declaration of Republic, September 4, 1870; Declaration of German Empire, Versailles, January 14, 1871. the Commune; Thiers, president, resigns, 1873.

1873-1879. MacMahon, president, attempts to make kingdom.

1875. Republic legally recognized, 1875; Provisional Constitution; President; term; Senate and Chamber of Deputies; Gambetta; Compare U. S. Constitution.

1877. Elections; victory for Republicans.

1878. Paris International Exposition.

1879. Jules Grevy, President.

1881. Tunis taken by France; colonial policy.

1882. Withdrawal from control of Egypt by France, leaving England in control; importance.

1883. Madagascar troubles; French protectorate.

1884. China War; Annam and Tonquin French possessions; colonial policy.

1887. Sadi-Carnot, president; Boulanger; danger to Republic; change in Constitution.

1892. Panama canal; DeLesseps; canal scandal.

1893. Dahomey French possession; colonial policy.

1894. Carnot assassinated at Lyons; Casimir Perier, president, resigns.

1895-1896. Felix Faure, president; alliance with Russia; importance; Dreyfus case.

1899. Faure dies; Loubet, president; colonial policy; unprofitable results; seizure of 3,200,000 square miles of "unoccupied" land in Africa and Asia during last fifty years.

GERMANY.

Unification of Germany 1871. See France.

1871. Empire declared; William of Prussia, crowned Emperor at Versailles, 1871; Bismarck; Constitution declared; Emperorship hereditary in Kings of Prussia; legislature; Bundesrath, or Federal Council; Reischstag, or Imperial Diet; comparison with U. S. Constitution; foreign policy to be directed by Chancellor, Berlin, seat of government; provision for large army.

1871-1876. Alliance of Russia, Germany, Austria; purpose.

1871-1879. Organization and government of Alsace-Lorraine.

1873-1877. Culturkampf; cause; events; result; Bismarck.

1879. Triple alliance, Dreibund; Germany, Austria, Italy; purpose; present existence.

1888. Death of William I.; absolutist; Bismarck; Frederick I; liberal; reigned three months; death; William II., absolutist; Divine right.

1890. Bismarck, maker of empire, resigns chancellorship; cause.

1891. Baltic canal; importance to Germany.

1897. Kiao-Chou ceded by China to Germany; colonial policy; partition of China.

1898. Bismarck dies; greatest statesman of Europe; review of life work; militarism; socialism; condition to-day; colonial policy; seizure of Kaiser Wilhelm's land in New Guinea, and large areas on east and west coast of Africa, a total of about 1,200,000 square miles; results unprofitable.

ITALY.

1870. Unification under Victor Emmanuel; Rome, capitol; loss of temporal power of Pope; Pope Pius IX; Quirinal vs. Vatican; guarantee laws.

1878. Victor Emmanuel dies; Pope Pius IX dies; accession of King Humbert; of Pope Leo XIII.

1879. Joins triple alliance; purpose.

1889. Abyssinia War; claim of territory; colonial policy.

1895-1896. Total defeat in Abyssinia.

1899. Demand on China.

RUSSIA.

1877-1878. Alexander II. since 1855.—Russo-Turkish War; cause; atrocities by Turks in Bulgaria; parallel between this war and recent war with Spain and the United States; total defeat of Turks; treaty of San Stephano; terms; effects of treaty.

1878. Congress of Berlin; purpose; Eastern Question; Bismarck; Gortschakoff; Beaconsfield; results; defeat of Russia; nihilists and nihilism; trace cause from freedom of serfs by, and liberal measures of, Alexander II.; consequent dissatisfaction against absolutism; reaction in form of nihilism and demand for Constitution.

1881. Alexander consents to publication of Constitution; killed by bomb same day, March 13; character of Emperor; parallel with Lincoln.

1881-1894. Alexander III.; absolutist; treatment of Jews, Lutherans and Dissenters.

1891. Russia begins construction of trans-Siberian railway terminus, on Pacific. completion in 1902; purpose: effect on very recent history.

1894. Alexander III. dies; Nicholas II. ascends throne.

1895. Settlement of boundary between British and Russian possessions in Asia; importance; relation of policy of each in Asia.

1897. Cession by China to Russia of Talien-Wan and Port

Arthur; importance; relation to trans-Siberian railway an national movement; partition of China.

1898. Emperor proposes disarmament of European powers an Peace Congress; extent of Russian territory in Asia.

GREAT BRITAIN.

Victoria, queen since 1837; 12,000,000 square miles under control; 390,000,000 of people, more than one-fourth of mankind.

1868–1874. First ministry of Gladstone; politics, liberal and conservative; Irish question; disestablishment of Irish Church.

1870. Tenant right bill.

1872. Alabama claims.

1874-1880. Disraeli, Beaconsfield; conservative.

1876. Control of Suez canal; reason; importance.

1877. Queen declared Empress of India.

1878. Acquires Cyprus commanding Suez Canal; Congress Berlin; Eastern Question.

1878–1881. Unsuccessful attempt to conquer Boer Republic.

1878–1881. Afghan War; cause; purpose; Beaconsfield dies.

1880–1885. Second Ministry of Gladstone; Home Rule mov ment in Ireland; Parnell; land league; purpose; suppressio Coercion Act; parties.

1882-1885. Occupation of Egypt; Arabi Pasha; Wolsele Soudan; Gordon; Egyptian question.

1885. Burmah attached; colonial policy.

1886. Home Rule bill defeated; Gladstone succeeded by Sal bury; Irish question; Coercion Act.

1892-1894. Gladstone, minister; Home Rule bill defeate Gladstone retires; parties.

1894-1895. Roseberry, minister.

1896. Jameson's attack on Boers; purpose; result.

1897. Wei-Hai-Wei ceded by China; importance.

1898. Gladstone dies; expedition up the Nile to Soudan und Kitchener; conquest of Soudan attempted between Egypt a Equatorial Africa, to permit building of railroad from Cairo to Ca Town, all in British territory.

1899. Partition of China; colonial policy discussed; duri last fifty years, seizure of over 3,600,000 square miles of "unocc pied" land; one-eighth of Asiatic continent and more than on third of its entire population contained in British India.

CHINA.

Disintegration begun by Great Britain in Opium War, 183 1842. Hong Kong ceded.

1858. Cession of Manchuria to Russia.

1861. Cochin China annexed by France.

1862. Cambodia annexed by France.

1884. Anam and Tonquin annexed by France.

1893–1896. Part of Siam annexed by France.

Total area of 383,000 sq. mi. annexed by France.

1894–1895. War with Japan—cause—Corea; total Chinese defeat. Treaty of Shimonoseki,—terms—cession of Formosa, Japanese protectorate over Corea, indemnity 230,000,000 taels. Interference of France, Germany and Russia.

1897. Cession of Kiau-Chau to Germany—Port Arthur and Talien-Wan to Russia—Wei-Hai-Wei to Great Britain.

Future of China.—Recent demand of Italy and Belgium.

1898–1899. Incroachments of Russia, England, Germany and France.

JAPAN.

Form of government up to 1881—Relation to United States.

1881. Promise of constitutional government in 1890.

1890. Parliament—change of government.

1894–1895. War with China,—as above.

BELGIUM.

1885. Leopold II., King of Belgium, made Sovereign of Congo Free State, 900,000 sq. mi. and 30,000,000 population. To be annexed to Belgium after 1900.

1899. Demand on China.

References: A General History of the World. By Victor Duruy. Translated from the French, with a summary of contemporaneous history (1848–1898), by E. A. Grosvenor. T. Y. Crowell & Co., N. Y. Appleton's Annual Cyclopedia. Heilprin's Historical Reference Book. Barnes's School History of the World. Barnes's Universal History. Myers's General History.

The first-named work has an excellent summary of the grade work, and may be consulted in the Low Library, Columbia, and probably elsewhere. It is not on the list.

FOURTH MONTH. CIVIL GOVERNMENT.

As in 6 B the organization of the United States Government is taken up, and in 7 A the Constitution of the United States, with incidental comparison with State government, the work of 7 B is taken to be a study of the government machinery and the powers of the State and its various divisions down to the locality in which the pupil lives, and in which he is most likely to witness its powers exercised.

The relations of the two governments—State and National—under which Americans live should be clearly developed, as the organization and the powers of the State and its divisions are unfolded.

The method of teaching is to be in the form of oral lessons, with blackboard analysis, oral and written recitations, supplementary reading, and note-taking.

Analysis: Civil Government.—Meaning of term; necessity of civil government; what is meant by constitution of a nation or a state; what a law is.

Forms of government—Monarchy, aristocracy, democracy. Monarchy, absolute or limited, hereditary or elected. Democracy, pure and representative—republic.

Government of United States—combination of State and Federal governments. State Government, New York. Geographical divisions of state, counties. Divisions of counties, cities, towns, villages. Constitution of state, New York.

Elections: Qualification of voters—sex, age, no previous conviction of crime, citizen ninety days. Reference to women's suffrage, aliens, property or educational qualifications, residence, registration. Right of suffrage single. Candidates, how chosen, time of election, ballot and manner of voting, counting of ballots, majority and plurality, plurality sufficient.

Departments of State Government. Legislature, Senate, Assembly. Districts, 50 Senate, 150 Assembly. Organization, quorum, powers, passage of law, veto, joint powers.

Governor. Term and qualifications, powers and duties, veto, pardoning power, commander-in-chief, proclamation.

Lieutenant-Governor. Administrative State officers.

Counties and town officers, supervisor, sheriff, district-attorney, county clerk, town meeting.

Cities and villages—nature and formation, relations to state and county, classification of cities.

Courts—justice of peace, county judge, Supreme Court, Court of Appeals, Surrogate. Other public institutions: Taxes, education, charities, fire and police depts., roads and streets, canals, militia, jury duty.

City Government. New York City. Reference to old city, consolidation, Greater New York, Mayor, President of Council, Municipal Assembly, Council, Board of Aldermen, ordinances and tax rate, Board of Estimate and Apportionment, administrative officers, commissioners appointed by Mayor.

References and supplementary reading: Young's Government Class Book. Fiske's Civil Government, Keyes's Civil Government of State of New York. Griffin's Civics for Young Americans. Brooks's How the Republic is Governed. Dole's American Citizen. Townsend's Analysis of Civil Government.

FIFTH MONTH. FORMS OF ARISTOCRATIC GOVERNMENT.

An aristocratic government has been taken to mean a government in which the ruling power is in the hands of a privileged class, or of which a privileged class is part, to the greater or less.

exclusion of the common mass, the privilege conferred either by wealth or heredity. A teacher desiring to study this subject in a comprehensive way might follow the course here suggested.

Of such governments the following are selected:

Outline. Sparta, ninth century, B. C., Lycurgus, divisions of people and land, divisions of government, dual kingship, senate, assembly, ephors, institutions, education, purpose of government.

Athens, seventh century, B. C. Aristocracy of birth, archorship, Draco, Solon.

Rome. Early Roman Kingdom, senate, assembly, early Roman Republic, consuls, senate, patricians and plebeians, result, tribunes, decemvirs.

Venice, thirteenth century, A. D. Grand Council, Golden Book. Council of Ten, government till Napoleon I., 1897.

Geneva, sixteenth century, A. D. Government by council of principal families to near end of eighteenth century.

England. Walpole to Reform Bill of 1832, present government.

References: Ency. Brit. Art. on various countries.—Nobility. Barnes's General History. Myers's General History. Appleton's Encyclopedia. Woodrow Wilson's The State.

In all the books quoted, care has been taken to include, with very few exceptions, only those likely to be found in the various school libraries, and so readily accessible to the teachers.

Meaning of Geographical Names.

By Gustave Straubenmüller. Associate Superintendent, N. Y. City.

FOR half a century or more considerable attention has been given to the study of the meaning of geographical names, and efforts have been made to induce teachers of geography to utilize in their class-room work the results of the investigations of such men as Egli, Taylor and Murray. Even a desultory reading of the subject will convince the teacher of the correctness of Dr. Gaebler's assertion that the study has (1) historical value, since it indicates frequently the trend and degree of civilization attained by the givers of the names ; that it has (2) geographical value because by means of it we often get a picture of the topography, soil and climatic conditions of a country, of the customs of a people, or of the physical aspects of a country which were effaced long ago ; that it has (3) didactic value because the name, if interpreted, is not a meaningless word, and because it aids the memory of the child in retaining names otherwise soon forgotten. If a teacher can bring about correlative association in teaching strange geographical names, he will succeed in so impressing them on the memory that they will stick for all time.

Names are frequently the sole records we have of the migrations and language of a people ; names hoard knowledge just as books do. Trench says : "Let us a little consider how we may usefully bring our etymologies and other notices of words to bear on historical and geographical teaching which we would impart in our schools. . . . When we have a stream called Wansbeck-water (North of Newcastle), and know that the three words of which the compound is made up all signify water, the first being Celtic, the second German, the last English, we at once recognize three changes of inhabitants, to whom the older name successively lost its signification." Many other cases in point may be cited to show that the original meaning of names has been weaned from our thoughts ; we speak of a Rio Grande River, the Tang-tse kiang River, the Thian Shan Mountains, unmindful of the fact that rio and kiang signify river, and shan means mountain. Frequently teachers speak of the Desert of Sahara or Sahara Desert, entirely oblivious of the tautology, for Sahara means desert. So faithfully do the names given to places in Palestine in biblical times picture the physical of the country, that an interpretation of their meaning ly describes those places even at the present time. That ıames do tell a tale was proven by Coordes, the author of a ı the meaning of geographical names. It is related of him described a trip from Jerusalem to Acre or Acco, to a trav- o had just returned from the Holy Land. His graphic on was in such keeping with facts as to lead the traveler to that Coordes was speaking from personal observation. s, however, had based the whole description on his knowl- the meaning of the names of places, hills and rivers of bib- ılestine, which had become familiar to him in years of study. ı called the attention of the traveler to certain peculiarities d not appealed to him at the time of his visit.

study of the names of our country will reveal profitable ıtion as to the nationality and character of its early explorers tlers. I venture to say that a student of philology with no dge of our early history will trace on a map of North Amer- explorations and settlements of the Spanish, English, and Dutch. Florida, Colorado, Sierra, Cañon, Montana, ınde clearly indicate the trend of Spanish venture; Brook- oboken, Staten Island show Dutch occupation; West Point, ıth, Providence, Maryland, Georgia, English influence; Mon- ake Superior, La Crosse, St. Louis, Orleans, French enter-

r original names are frequently full of meaning, sometimes l, at other times quite practical. It is interesting and profit- draw inferences and conclusions from the meanings of names, speculate upon the reasons for their assignments. Missouri muddy. The color has been likened to coffee after milk has lded. The fact that it is muddy leads us to infer (1) that the is very swift, thus the soil with which it is charged does not opportunity to settle but is carried along; (2) that the river e winding or crooked because the color indicates that the ıcroaches on the land and carries away portions of the banks; the banks are composed of soft rocks or yielding soil, for if nks were rocky and unyielding the water would be clear— the waters of the St. Lawrence. The facts bear out the con- s, for upon closer observation we find the current of this pposite Bismarck, so swift that it would, indeed, be danger- entrust oneself to it; we can also see that it is one of the ortuous of rivers, and it is true that its banks are composed ding alluvial soil. The turbid waters of the Colorado are l with a red sediment, hence the name which means red. Rouge means staff, and was so called because of the bright k of the tall, slim cedars that grew near the Mississippi. rivers of the world also obtain their names from their color. o great streams which unite to form the Nile, the Bahr-el-

Abiad or White River, and the Bahr-el-Azrek or Blue River, are so impregnated with earth that they assume these colors respectively. In fact, the united rivers for some distance after their junction, preserve their colors distinct.

Does not Mesopotamia become more interesting when one knows that mesos=between and patamos=river, the land "between rivers"! The region is almost islanded by the Euphrates and the Tigris. Bab-el-Mandeb means nothing to us, it does not appeal to us, gives us no information, but translate it, and instantly the imagination is stirred to its very depth, scenes of shipwreck and suffering are conjured up, and the terrors of the passage are poetically pictured. The native, who braved it in his primitive boat, in the tearful memory of his less fortunate brother called it "Gate of Tears." An old legend located a magnetic hill at the most easterly point of Africa, which was supposed to draw the iron nails out of the sides of ships. The sailors called it "Cape Guardafui,"—quite appropriate if we consider the risks that were thought to attend its approach, for Guardafui means, Beware! Take care ! The name Adria, an inland town twenty miles from the coast, and Adriatic Sea are strikingly similar. Yet why should a great sea derive its name from a small inland town ! A moment's research will divulge the fact that Adria was a seaport when its name was given to the sea, but that the sediment, carried to the sea by the Po and deposited at its mouth, has extended its delta seaward, and Adria is no longer seaport.

We can trace with some degree of satisfaction the path of the various races that overran the British Isles. Towns settled by the Anglo-Saxons may readily be recognized by the terminations "ton" and "ham"; those settled by the Danes by the endings "by" and "thorpe"; those due to the Norsemen by "garth," "wick" or "wich." These terminations originally meant a piece enclosed land on which a homestead had been built, as Wellington the settlement of the Wellings. Castra, corrupted into chester caster, indicates Roman occupation. The great road building Romans are also responsible for the term "street," Latin "stratum The word "dun" as a prefix or suffix corrupted into "don" ar "dum" is of Celtic origin.

Names were often assigned to give a local habitation to legends as Odessa, supposed to be the site of the Greek city Odessus, w so named in commemoration of the hero of the Odyssey (doubtful Bosphorus, the "passage of the bull," recalls the legend of Euro being carried across the strait on the back of a bull.

Names frequently indicate the calendar days of the discovery Natal on Christmas Day, Florida on Easter Day, Ascension o Ascension Day, Rio Janeiro on the 1st of January, Rio de San Fran cisco on St. Francis Day, October 4. Names of discoverers, ships and commanders of exploring expeditions are given to places. An ustration of this is found in the Arctic regions. We find here most exclusively the names of celebrated geographers, explorers d patrons of expeditions. In our own country names of Presients, colonial governors and sovereigns are found ad libitum, unfornately we have not always retained the picturesque Indian names, r names appropriate in any sense of the word. Emerson says, Our country is whitewashed all over by unmeaning names, the st-off clothes of the country from which its emigrants came."

Chinese names would lose some of their terrors, if properly inrpreted. Pe = north, tong or ton = east, nan = south, si = west, ing = capital city, hai = sea, ho or kiang = river. It is also teresting to know that the Kuenlun are the onion mountains, the ltai the gold mountains, Thian Shan the mountains of the gods, aimatchin the buying and selling place, *i. e.*, the trading place.

In an article of this kind only brief references are possible; for ore extended study books and treatises are available to the teacher. riginal research on the part of the public school pupil is well-nigh npossible; most of the work will fall to the teacher's lot. It is ise to select for interpretation only names whose meaning ay be easily comprehended by the pupil; the teacher should make list of all geographical and historical names occurring in his class rk and select such as have an interesting and instructive history, are full of meaning when interpreted. The study, if carefully d systematically pursued, will facilitate the recollection of geoaphical and historical names, will lend additional interest to the rk, will engender a spirit of inquiry and research, and frequently ll give the pupils a clearer insight into the physical and other pects of a country than would be possible without any knowledge this subject.

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All of these books may be found and consulted in the Library the Columbia University.

Geography In The Brooklyn Schools.

By Homer C. Bristol.

IT has been remarked that many professed autobiographies are really ought-to be-ographies ; the writers, confusing past deeds with past dreams, quite transfigure their records in telling of them. It is the purpose of this article to distingush between the real and the ideal, and to narrate what is, rather than describe what should be.

Some of the best work may not be mentioned, likewise some of the worst. It is not the exceptional, the tentative nor the obsolescent, but rather current practice, with which we should have to do.

Some distinctive features of the public schools in Brooklyn affect their work in geography. We have systems within the system. We have central authority, central supervision and a uniform course of study. Thus our system is upon broad lines, within which separate schools are not closely related to each other. The local pedagogical center is the principal. He conducts the elementary education for ten thousand, and oftener twenty or thirty thousand and even as high as eighty thousand population. The principal has an open booklist from which he may choose the oldest or the newest geographies on the market; he may elect whether his supplementary reading be geographical, literary or informational; he may indicate or modify the order of presenting lessons, the devices used, the way or method of teaching; he may plan schemes of experiments, or leave the teacher to get along alone.

As a result there is no uniform way of teaching geography and no need for hesitating at any time to adopt better modes of working. One school may draw many more maps than another; or induce the children to collect more pictures and minerals ; or use a fuller line of physical experiments; or employ more geographical supplementary reading books. A principal may use stereopticon pictures ; our authorities will darken his assembly room and will pay for oxygen and hydrogen for the calcium light, and will loan him slides received from the State through Prof. Bickmore ; but lanterns and lantern slides are not yet listed as school supplies. This diversity is freedom; it is opportunity; it puts at once resource and accountability upon those charged with the immediate conduct of our schools.

There is however a strong unifying force in the course of study. hat is, what is taught. Books are useful embodiments of material nd utensils; they are valuable only as they minister to success vith the course of study. The interpretations of requirements in geography given in the grade meetings of the Brooklyn Teachers' Associations, for years, have tended to make the best teaching well known.

From what has been said it is apparent that our purpose requires a statement of the outlines of the course of study. And here it is proper to remark that geography, as a science, is not taught in the Brooklyn schools. Its scientific arrangement, its formal divisions and logical sequences are sacrificed to the interests and abilities of hildhood to enjoy and to comprehend. Its material is graded and ombined with reference to juvenile powers. Such geography tands broadly for the relations of the earth and its life to human ife. It contains items from nature and science and their literary mbodiment. While.giving us this geographical material, carefuly elaborated in outline, our course of study does not name it geogaphy until the fourth year in school. Beginning with the second ear, the title is Nature. And Nature consists of animals, plants and iscellaneous. Under each subdivision definite work is specified. he study of animals aims to promote observation and fondness of nimal life. The study of plants presents the processes and uses of egetable growths. The method uses the objects themselves and oks treating of them. So reading, language and composition emloy the same nature material. Animal study reaches hints of classication in the fourth year, and minerals are added to the plant line ird year. The miscellaneous nature is the most geographical of l. It continues simple observations upon the weather and rises a knowledge of land and water forms, the phases of the moon, irection, temperature and the like. In the fourth year the title eography is assumed, and an easy geographical reader is available.

In the fifth year the caption, Geography and Science, is had. A xt-book in geography is now expected; experiments upon the retions of water and the atmosphere are to be given and a geographal reader may be used. The most distinctive feature is the science undation here laid for physical geography. The requirement ads: "Causes of clouds, fogs, rain, hail, snow and dew, objecvely illustrated and explained." As before stated, there is no set ode of fulfilling this stint. The scope of average usage may be ndicated as follows: That the air acquires by evaporation a vast urden of invisible water may be shown by related observations, uch as are here suggested. Upon paper draw a scale of three nches, showing also halves, quarters and eighths, paste this upon the outside of a common glass tumbler so as to measure the depth of water in the glass; fill the glass to three inches deep. Note the vaporation from day to day. Fill several glasses in the same way.

Put one in the coolest place in the room, one in the hottest, cover one, etc. Note how heat affects evaporation. Teach how the ocean, all fresh water and everything moist gives water into the air and that all air carries unseen water. Note the drying power of the atmosphere when a hot wind blows, etc.

Then by some simple device bring a saturated atmosphere into contact with a cool surface; note the formation of water dust, a tiny cloud or fog; and of a condensed drop, a veritable rain. Then teach what would happen if this condensing water were frozen and so account for snow flakes and hail stones. This may serve as a sample of the effort to give work in geography. A basis in easy and familiar science, and to make clear the easy phenomena of physical geography.

In the second half of the fifth year the relations of heat and the atmosphere are explained; the heat belts and their seasonal changes, the trade winds and Gulf Stream are considered.

In the first part of the sixth year the study of climate and its conditions grows out of the science foundation of the preceding year. In the latter term this physical work is further developed. Atmospheric pressure and the construction and use of a barometer receive attention.

Meanwhile the earth as a whole, the race types and environments, the great foreign countries. our own land, its chief cities, products and areas of production, precede the usual order of studying the grand divisions of the earth.

In the eighth year geography is reviewed incidentally in the study of the history of our own country.

It may be interesting to show how supplementary readers are made serviceable. My predecessor at No. 10 gave special attention to the teaching of English; geography, while not slighted, had received no particular care. Beside the usual text-books in geography, pupils in the fifth year read, "Familiar Animals and their Wild Kindred," "Plants and their Children," "Stories Mother Nature told her Children," Greene's "Coal and Coal Mines," and Carpenter's "North America." It is not to be understood that each child read all of these books, but that sets of these books were used among half a dozen classes, each class using most of the list.

In the sixth year the supplementary geographical readers were: Coe's "Our Own County," "Our American Neighbors," "Modern Europe," Carpenter's "Asia," and "Information Reader No. 3."

When the main divisions of geography have had due consideration, beginning with home, country and continent, special care is given to the geography of commerce. Then attention turns to our own land once more. Its geography becomes handmaid to its history during the eighth school year.

This mark of correlation is characteristic from the least beginnings of Nature study, where oral language finds its topics, all through the years where composition is based, as far as time permits, upon geographical subjects unto the last association of our country and its story. It is explicitly enjoined that the formal elements, mathematical, physical and descriptive geography be taught together and not separately, and by small manageable increments in each grade and not in a consecutive order.

In a word, the teaching of geography in the schools of Brooklyn, while based upon a uniform course of study, varies considerably in detail; it is directed by the principals; it emphasizes the familiar science basis of physical phenomena and teaches this element largely by experiment; it uses geographical readers freely; it encourages objective and illustrative work; it favors the introduction of the stereopticon, and it uses all available correlations with other branches.

The Course of Study In Geography.

FOR THE GRAMMAR GRADES.

By Clarence E. Meleney.

THE History Monograph (see p. 118) contained a review work of Grades 4 A to 6 A inclusive. The scope covered in grades may be summed up in the following sequence, constitutes the elementary study of the subject:

4 A 1. Home Geography. 2. World, as a whole.
4 B 1. Western Hemisphere in general. 2. North Amer detail.
5 A 1. Eastern Hemisphere in general. 2. Europe in det
5 B 1. The United States as a whole. 2. The Groups of S
6 A 1. The other countries of North America. 2. The tries of South America.

In this elementary study of geography, the physical aspe the earth are subordinated ; the life element, and the human a are the predominating motive of the work. General articles i volume emphasize this principle. See papers by Dr. Harris, S intendent Balliet and Professor McMurray. It is importan this plan be appreciated and followed by the teachers of grades for the following reasons : 1. From the standpoint of *est.* 2. From the practical point of view. All the leading au ities agree that the human side of the study appeals first t child and is most easily comprehended ; and that the study c world as the home of man and as the material for his use is c highest practical value. Children completing their school c at the end of the fifth or middle of their sixth year will become familiar with the essential geographical knowledge which to enter the world of business activity.

In Grade 4 A *Home Geography* is the first consideration method is objective. It is not to be supposed that the stu local geographical elements is to be confined to one grade. are object lessons to be derived from local material in all grad the course. But here there is little else than local subjects fo first three or four months. The selection of subjects will d upon the location of the school and the material at hand. and community life, city officials, institutions, industries, t and transportation, streets, parks, the weather and season available for all; the river, bay, islands, ocean, hills and other physical features may be observed by many.

These objects constitute the starting points for physical, industrial and political geography, and they will continue to furnish illustrations for the more thorough study of these subjects in later grades. Pictures of familiar scenes furnish the means of understanding illustrations of remote places. I should begin with the objects nearest, whether of the civil or natural phase of the subject. Drawings of plans and geographical forms, and representations of outline and surface forms in sands should form a part of the work.

The latter part of the term is to be devoted to the study of the world as a whole in an elementary way by the application of the ideas derived from observation to the larger outline and surface forms of continents and oceans and their locations.

I wish to quote a few paragraphs from the report of the Committee of Ten, bearing upon the work of these elementary grades. The report in full should be in the hands of every teacher of geography.

1. *Observation Geography.* In the judgment of the Conference, observation should go before all other forms of geographical study and prepare the way for them; the object being (1) to develop the power and habit of geographic observation, (2) to give the pupils true and vivid basal ideas, and (3) to arouse a spirit of inquiry and a thirst for geographical knowledge. This work of observation should begin with those features that lie immediately about the pupils and so fall easily within the reach of their direct study and ready comprehension. In rural districts, the natural features of the surface will obviously form a large part of the study, while in cities, the artificial features must largely take the place of these. In the one instance, natural geography, as seen in the forms of the land, the hills, the valleys, plains, meadows, divides, streams, lakes, etc., will predominate, while in the other artificial or humanistic geography will receive leading attention, as streets, railways, wharves, harbors, parks, plots, wards, etc.; but something of both these groups of subjects may be found and utilized in both localities. Neither should be neglected, for the pupils need not only to acquire clear ideas of the things by which they are chiefly surrounded but type ideas of the things which characterize other localities and of which they need to form correct ideas without being able to see them. Observation, however, should not be confined simply to the passive fixed features by which pupils are surrounded. They should observe the agencies that produce surface changes, such as winds, rains, floods, thawing, freezing, cultivation, etc. The temporary streams that follow heavy rains represent on a small scale many of the natural processes by which surface features are produced. From these immediate agencies, the observations should extend to the phenomena of the weather and the climate, such as temperature, winds, clouds, seasons, etc. As a step toward the understanding of mathematical geography, so-called, the children should be led to observe the shifting of the sun north and south with the seasons and to measure the amount of this by the length of shadows at noonday in the different months of the year. They should compare these by means of a record kept for the purpose. In like manner, they should observe the movements of the stars and other heavenly bodies. As a step toward the study of distribution of plants and animals and an insight into their dependence upon temperature, soil, food, etc., the pupils should be encouraged to observe the differences of plants on uplands, lowlands, marshes, etc., and upon sandy, clayey, gravelly or stony ground, and to note the habitual dispersal of animals and insects in the neighborhood, and also their relations to each other, as in forming or frequenting forests, prairies, meadows, etc. As a step toward the study of the human

elements in geography, observations should be made upon the population and its distribution, upon home occupations and productions, upon local political boundaries, as wards, school districts, city or town limits, etc., and upon the location of cities, villages, railways, canals, etc. Thus, by a little ingenuity and industry, a large part of the features that make up the substance of geography in the large sense may be found illustrated close at home, and, if suitably studied, the basis may be laid for clear conceptions of those features which lie beyond the range of the child's observation.

'Observations should not only begin the work in geography but should continue throughout the entire course beyond. If scholars are not educated so as to continually observe geographic features and note their significance whenever they are brought in contact with them, whether during school days or afterwards, the school work fails of its most important possibilities. The pupils first observational work is necessarily of the simpler and more superficial kind. As knowledge and insight increase, they should see more and more of the geographic phenomena that come before them and see deeper and deeper into their significance and receive increasing pleasure and profit from them. To this end every opportunity for observational work in geography should be eagerly embraced. Excursions for the special purpose should be made as frequently as practicable, formally or informally, in school hours and out of school hours, by classes and by individuals. Advantage should be taken of incidental excursions in which the class or any of its members participate. The little trips and longer travels of members of the class should be taken advantage of. Late in the course, special studies of certain geographic features may be taken up with success and profit.

"2. *Representative Geography.* Immediately after the making of observations should come their reproduction in the form of descriptions, sketches, maps, models, etc. The instruction of the teacher falls far short of its highest efficiency if the early work is merely observational and receptive. The great end of education is to create productive ability. One important form of this is representative production. Besides having value in itself, the description of features that have been seen and their representation by sketches, maps, or models reacts upon the observational work and induces a clearness, sharpness, and definiteness that it would not otherwise be likely to take. Not only this, but it leads the scholars to realize what maps, descriptions, etc., really mean. By this means, pupils are lead up naturally to an ability to read with vividness, ease, and full understanding, the maps and descriptions which constitute the medium of the larger part of their later studies, and such ability to read is of supreme importance in all subsequent work.

3. *Derivative or Descriptive Geography.* When pupils have gained true and vivid basal ideas by observation and have, by reproducing these, acquired a realistic sense of the meaning of maps and an ability to read them, in the full and proper sense of the term, they are prepared to pass on to a formal study of descriptive geography. In this, the observational and representative work of others than themselves is made the basis of study. The pupils are not now studying the earth's surface but " a description of the earth's surface." The work is not direct and immediate, but derivative and secondary. The pupils cannot carry their own observations over more than a very small fraction of the earth's surface and their work upon even this small portion must, in the nature of the case, be very imperfect. Their great dependence must, therefore, be upon the work of others, the work of geographical experts, and hence descriptive geography must embrace much the largest portion of their attention. The common mistake is that it embraces too nearly all of it, and the observational and reproductive efforts which are necessary to give the study of descriptions its greatest serviceability are neglected. These should be continued throughout the course running parallel with the descriptive study and supplementing and vivifying it."

"*A*. Under the head of resources for the culture of the observational powers will obviously fall (1) study of surface forms, such as hills, valleys, plains, plateaus, streams, lakes, shores, and all similar phenomena within the pupils' horizon. These may be approached, as already indicated, by observations on miniature forms of like nature, such as may be found in gutters, gullies, ravines, brooklets, ponds, " bottoms." etc.; (2) observations on the temperature and its relations to the direction of the sun's rays, the apparent motion of the heavenly bodies, as their circling around the poles, the rising and setting of some stars and not of others, the shifting north and south of the sun, moon, etc.; (3) movements of the atmosphere and their effects, rain and its effects, snow and its effects, fogs, clouds, etc.; (4) plant life and its dependence on heat, moisture, sunlight, etc.; the influence of soil, slope, etc.; (5) observations on animal life, of similar nature; (6) observations on man in the family, in educational, church, social and business organizations, in city and town organizations, and so on up toward the larger human organizations and the forms of government. So also, observations on city and town plots with their street systems, railways, canals, harbors, their wards, school districts, etc.

B. Under work involving the culture of the imagination will fall the formation of concepts of all the larger features of geography and of all features beyond the range of observation; as (1) the river basins, the great relief systems, the continental divisions and sub-divisions, the ocean bottoms, the distribution of land and water, and, in a less pronounced way, the picturing of all geographical features not actually observed; (2) modifications of apparent motions due to imagined changes of position of the observer on the earth's surface, such as the position at the pole, on the equator, on the different parallels, etc.; (3) distribution of the meteorological agencies over the globe, as moisture, winds, climate; the mental picturing of the great wind movements, the cyclonic circulation, the zones, etc.; (4) distribution of plant life developed in the form of a mental picture in its relations to the earth's surface, to land and water, to altitude and climatic conditions, as distinguished from a mere memorizing of the facts of distribution without any such pictorial conception; (5) distribution of animal life in like manner; (6) distribution of races of men, forms of government, national territory, etc.

"*C*. Both of the foregoing lists of topics furnish the ground-work for the culture of the reasoning powers if the question of causes and agencies is raised in connection with them. Why do the several features take the forms they do? By what agencies were they caused, and why did these agencies work in such ways? How did these forms originate? What are the causes of the winds, the clouds, the changes of temperature? Why are the animals and plants distributed as they are? Why are these cities located as they are? Why are these large and those small? Why do these railways take this course rather than another? And so on."

The report of the Committee of Tên further treats the methods of teaching all of which are suggestive. This monograph cannot quote in full, but the following are offered as an inducement for a careful study of the report:

"Modelling, drawing, and other graphic modes of expression are fully recognized as indispensable means of aiding the imagination, intensifying thought, and strengthening memory. But these means should be kept subordinate to the study of the subject itself. They may be made ineffective and even harmful by degrading them to the drudgery of mere imitation, or the simple copying of other maps or models.

"The habit of making use of geographical knowledge in all studies to which it is applicable and the practice of constantly locating places on maps should be encouraged. In all reading, especially the study of history, travels, explorations, and other treatises including geographic descriptions, the places mentioned should always be carefully located."

"Topical recitation and study should be used as freely as practicable, and the subject developed by comparison of observations, by discussions, and by readings from all sources available, and by the introduction of all kinds o illustration. A large use of works of travel adapted to the capacity of the pupils is strongly recommended.

"The teacher can economize time in recitation by using the facts gained by a study of the assigned lesson as a point of departure for the purpose of leading on to additional facts and causes and results, for making comparisons, and for stimulating fresh thought upon the subject, instead of going over the subjec solely to test the pupils' memory and faithfulness. As an illustration, the class having learned what they can about the Mississippi River, instead of spending half an hour asking pupils in turn the length of the river, where it rises, between what states it flows, and into what body of water it empties, the teacher and the class may take an imaginary ride from the Falls of St. Anthony down the river and develop the facts connected with its course and their applications in a graphic and realistic way from the deck of an imaginary steamer.

"We urge upon teachers the free use of the crayon and blackboard. The simplest illustrations are of the greatest help, as, for instance, sketches of mountains, lakes, bays, etc., a few lines to show the comparatve size of mountains fanciful shapes of countries, sketch maps of countries, or parts of a country localities of coal, silver gold, or copper fields, simple sketches of plant and animal life, belts of forests and deserts, etc. The outlines of a country painted upon a cloth blackboard, in oil, form an invaluable and inexpensive piece of apparatus which can be used by the teacher while imparting information, and by the pupil in recitation.

"Charts, which can be readily made upon manilla paper with the rubber pen, are of great assistance in preserving illustrations for use from year to year

"The descriptive matter which is generally given in regular geographical textbooks is too condensed and often too dryly stated to awaken the highest interest in children in the intermediate and grammar grades The matter given in most works of travel and in geographical readers is better adapted to the understanding and appreciation of young pupils. In most of these books, the personal element interests the young minds and awakens their closest attention Within a few years ' geographical supplementary reading " has been provided in such abundance that every teacher has large opportunities of selection in this line of reading, and the free use of this is recommended."

In Grade 6B, the Geography and Elementary Science should be taught as one study. The article by Prof. Dodge in this number sets forth the ideas of the writer. Up to this point in the course of study the work has been elementary, and the human and life aspect of the subject has predominated. Now one term is given to emphasize the physical basis of geography. It is not too much to expect pupils of this grade to comprehend the scientific treatment of the subject. Dr. Harris says in the report of the Committee on Ten, "The subject matter of physical geography is of very high interest to the pupil who has studied geography in the elementary grades after an approved method. It takes up the proximate grounds and causes for the elements of difference on the earth's surface, already familiar to him through his elementary studies, and pushes them back into deeper, simpler, and more satisfactory principles. This study performs the work also of correlating the sciences that relate to organic nature by showing their respective uses to man. From the glimpses which the pupil gets of mineralogy, geology, botany, zoology, ethnology, and meteorology in their necessary connection, as geographic conditions, he sees the scope and grand significance of those separate inquiries. A thirst is aroused in him to pursue his researches into their domains. He sees, too, the borderlands in which new discoveries may be made by the enterprising explorer."

By directing a whole grade to the study of physical geography in the scientific method, the way has been been made clear for the extensive study of industrial, commercial and political geography during the seventh or last year of the grammar school course. This work is also closely allied to the history work of 7A and 7B. The article on Historical Epochs in the last number of the Monographs, pages 13–16, indicted the central thought of the 7A grade to be the Atlantic Ocean and the countries of North America and Europe bordering on it. This grade brings the geography of the United States and Europe up to date, and may be treated historically covering the last fifty years, or it may go back to the date corresponding to the 7A Grade History.

This is an intensely interesting and supremely important field of study. The development of the United States in geographical extension, in natural resources, such as mineral, forest, fisheries, industries, such as metal working, building operations in cities, ship building, agricultural and manufacturing, in travel and transportation, the immigration from Europe, the labor movements in West, South and East, the growth of intelligence, newspapers, books, education and the development of wealth and improved conditions of life. These are matters of geography and history. The study of Europe in all these particulars is to be taken up and compared with the United States; so also the development of Canada and Mexico. The history gives studies in the problems involving the tariff, protection and reciprocity which involve the relation of the United States to these other countries. The financial problems and policy of the country come in for a share of consideration, and these are to be found also in the course in arithmetic. Mr. Smith's article is so full of suggestion that a further discussion here is unnecessary.

The 7 B grade brings the history up to date, and deals with the commercial, industrial and political geography of the other continents; South America, Asia, Africa and Australia. All these have relations with the United States and with Europe, the former through the Pacific Ocean, which is now the center of the world's interest, and the latter through the Mediterranean and Red seas. All the aspects of the 7 A work may be taken as an indication of what may be done in 7 B. There are involved the Eastern Question, the opening of Japan, China, India and the Philippines to the world; the partition of Africa and the marvelous development of South and

East Africa, the wonderful development of Australia in all the arts of civil and industrial life.

No greater themes for inspiration could be offered to the pupils just about to step out from our grammar schools into a broader life. The whole world is now opened to them ; they have a glimpse of social life in all stages of civilization and in all climes ; they know how to reach every part of the world and where inviting fields await their investments ; they know what the world yields and what it wants ; they have some idea of the relation of great powers to weaker ones, and of the obligations of civilized peoples to the less enlightened ; they know something of the spirit of patriotism, of heroism of civilized and of so-called uncivilized peoples fighting for the principles that move the world of to-day. They have learned that the whole world is open to them and that they are or may be cosmopolitan. The articles by Mr. Jenks and Dr. Conroy in this number take up the work in detail and carry out the underlying thought of this grade.

I am indebted to many of our principals and teachers who have sent me the titles of poems or prose works learned or read by the pupils in connection with their work in geography and history, and to Superintendents Gregory of Trenton, and Spaulding of Montclair. A few of the titles are here given, the space afforded in the monograph will not permit a complete list. An attempt has been made to grade these works.

GRADE 4 A.

The Wonderful World,	Lilliput Lectures
The Brook,	Tennyson
The Cloud,	Shelley
Voices of Spring,	Hemans
Hudson River,	W. C. Bryant
New York,	F. Fay
River,	Longfellow
Rainbow Fairies,	Hooley
The Wind,	R. L. Stevenson
Run, Little Rivulet, Run !	Monroe's Third Reader
Waves on the Sea Shore,	Appleton's Third Reader
The Brook in the Hollow,	do do
Clouds,	A. K. Eggleston
The Endless Story,	do
The Children in the Rain,	Rowe
The Life of a Dewdrop,	do
The Message of the Snowflake,	do
The Impatient River,	do
The Voyage of a Pebble,	do

THE BUBBLING SPRING.

Down in the orchard a bubbling spring,
  Ripples out from its ferny bed.
The water is sweet and cool and pure.
Though the brook run dry you are ever sure
  To find that silver thread.

Always the same in the fresh May days,
  Or in the summer's burning heat;
It bubbles, and flows, and softly sings
Of the clearest, purest, loveliest things,
  In a voice that is low and sweet.

Down in the orchard the children go,
  And beautiful lessons learn,
As they drink of the water and list to the song
Of the limpid spring as it bubbles along
  By the side of the waving fern.

GRADE 4 B.

Old Winter,	Translated from the German
Jack Frost's Little Sister,	Youth's Companion
The Hudson,	Wallace Bruce
Hiawatha,	Longfellow
Corn Song,	Whittier
Song of Indian Women,	do
Rain in Summer,	Longfellow
The Rainy Day,	do
Day Break,	do
Three Fishers,	Kingsley
The Fisherman,	Whittier
The Wind on a Frolic,	Hewitt
The September Gale,	Holmes
Freaks of the Frost,	Gould
The Wreck of the Hesperus,	Longfellow
The Gladness of Nature,	Bryant
The First Snowfall,	Lowell
The Brook and the Wave,	Longfellow
The King of the Golden River,	Ruskin
Stories of the Red Children,	Brooks
Indians and Pioneers,	Hazard
Old Mother Earth. Her Highways and Byways,	Simpson

GRADE 5 A.

The Ode to Greece,	Byron
The Lady of the Lake,	Scott
Count Robert of Sicily,	Longfellow
Excelsior,	Longfellow
The Stories of the Alhambra,	Irving
The Lady of Shalott,	Tennyson
Horatius at the Bridge,	Macauley
The Lays of Ancient Rome,	Macauley
Marco Bozzaris,	Halleck

England Within and Without,	R. G.
Alhambra and Kremlin,	D. T.
Stories from English History,	Crei
Stories of Early English History,	S
Short Stories of English History,	Bl
Tales of Scottish History,	
History for Young Readers, England,	

GRADE 5 B.

The Landing of the Pilgrims,	H
The First Christmas Tree in New England,	
The Hudson,	H
Our Yankee Girl,	H
The Burning of Jamestown,	E
Seventy-six,	E
Courtship of Miles Standish,	Long
Paul Revere's Ride,	Long
Abraham Lincoln,	E
Twenty-second of February,	E
The Lake of the Dismal Swamp,	Thos.
The Meeting, Sight of Land, &c.,	F
Lexington,	H
Boston Common,	H
Ballad of Boston Tea Party,	H
Poems of Places,	Long
A New England Girlhood,	L
A New England Boyhood,	
Standish of Standish,	A
Three Little Daughters of the Revolution,	
Grandmother's Story of Bunker Hill,	H
Battle of Concord,	Em
Death of Pocahontas,	Sigo
Burning of Jamestown,	Boys' B of Ballthyr by Thos. D Englis
The Fall of Mobile,	
The Fight of John Lewis,	
Betty Zane,	
The Long-Knife Squaw,	

GRADE 6 A.

Evangeline,	Long
Song of the Emigrants to Bermuda,	M
The Spanish Conquests in America,	Jas. Montg
Palmetto Leaves,	Mrs.
At Last Christmas in the West Indies,	C. Kin
The Rescue of Cuba,	D
Boy Travellers,	
Our American Neighbors,	

See History Monograph—Bibliography, pp. 65-7.

Grade 6 B.

The Hurricane,	Bryant
The Ocean,	Byron
The Firmament,	Bryant
The Gladness of Nature,	Bryant
Niagara,	Brainard
Wm. Tell to his Native Mountains,	Knowles
The Sands of Dee,	Kingsley
Crossing the Bar,	Tennyson
Chambered Nautilus,	Holmes
The Song of the Stars,	Bryant
The Mountain,	Stedman
The Sea,	Emerson
The Seasons,	Thompson
Old Ironsides,	Holmes
Grandfather's Story of Bunker Hill,	Holmes
The Boys of '76,	Coffin
Battlefields of the Revolution,	Drake
The Century Book for Young Americans,	Brooks
Daughters of the Revolution and Their Times,	Coffin
The Watch Fires of '76	Drake

Grade 7 A.

Sheridan's Ride,	Read
Barbara Fritchie,	Whittier
Under the Old Elm,	Whittier
The American Flag,	Drake
The Blue and the Gray,	Drake
The Building of the Ship,	Longfellow
The Traveller,	Goldsmith
Modern Greece,	Byron
Rome,	Byron
Lady of the Lake,	Scott
Bannockburn,	Burns
Hohenlinden,	Campbell
Charge of the Light Brigade,	Tennyson
The Eve of Waterloo,	Byron
The Prisoner of Chillon,	Byron
Inkerman,	Byron
The Rime of the Ancient Mariner,	Coleridge
Venice,	Longfellow
The Book of the Ocean,	Ingersoll
Philip Nolan's Friends,	Hale
The Man Without a Country,	Hale
The Peasant and the Prince,	Martineau
Life of Washington,	Scudder
Westward, Ho!	Kingsley

Making of the Nation,	W

GRADE 7 B.

The Pipes of Lucknow,	W
The White Elephant,	H.
The Porcelain Tower (Mackin),	
Japan,	
The Mosque,	Lord Hou
Allah,	Mah
The Three Kings,	
Nebo,	Fre
The Burial of Moses,	C. F. Ale
The Cities of the Plain,	W
Anthony's Oration,	Shake
Marius on the Ruins of Carthage,	
Pitcairn's Island,	B
The Revenge (Azores),	Ten
Teneriffe,	S. G. W. Ben
Coral Islands,	Ha
The Coral Grove,	Pe
The Exhumation of Napoleon,	
The Arctic Lover,	B
The Ship of the Dead,	Long
The Flying Dutchman,	J. B. O'
Australia and Islends of the Sea,	
The Story of Japan,	
Young Amerita to Japan,	
Japanese Women and Girls,	
Crossing the Line (Ecuador),	E. F.
The Damsel of Peru,	B
Rio Janeiro,	J. D.
Africa,	Maria I
The African Chief,	B
The Egyptian Princess,	Ed. A
To an Egyptian Mummy,	H.
The Sphinx and the Pyramids,	G. W
Marguerite of France,	He
Kiliwandjaro,	B. T
The Lion Hunt,	Thos. P
Thebes,	Ben
Santa Flomena,	Long
Vision of Belshazzar,	
The Arab to the Palm,	B. T
Abdel Hassan,	
The Date Garden of the Desert,	G. B. G
Clyte,	Walter Tho
The Vale of Cashmere,	Thos.

Editorial Notes.

BEFORE Comenius, instruction in geography is very little mentioned in the course of study. In his writings only, we find for the first time, definite suggestions as to what material to select for a course of study in geography and how to arrange the course. Further, Comenius was the first to advise us to make the knowledge of local geography and simple observations the basis of the study of our country and of our planet as a whole.

Rousseau expressed views similar to Comenius about the teaching of this subject and strongly denounced the fact that map drawing was substituted for direct observations of the child's environment. Rousseau said, "Let the child see the rivulet, the little lake or pond, the little hill and meadow, and then let these products of observation be developed, by the help of the imagination, into rivers, lakes, mountains and prairies."

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The subject has received very little help from Pestalozzi. But in comparatively recent years, geography has been accorded a high place in the course of study by Ziller and other disciples of Herbart. Ziller accepted the scientific view of Carl Ritter, that the aim of geography is the description of the earth as the *Home of Man*, but he subordinated this view to the general aim of education which is the all-sided, harmonious development of all the faculties, hence, geography is not only an exercise for the memory, but also a means to develop the powers of observation, imagination and reasoning.

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Since geography is to consider the earth as the home of man, it is closely connected with the influences that have made our country and our planet a suitable place for habitation, hence the study of geography should be correlated with the study of human history and natural history. The carrying out of Ziller's views in practice has given rise to what is known as the topical method in the instruction of geography. The topical method demands from the teacher the knowledge of the laws of the operation of the human mind; it further demands that the knowledge should be utilized in the process of instruction. The teacher is not to give dry geographical facts to memorize, but he is to train the observing powers of the pupil; he is to appeal to his imagination, to direct the sel activity of the child, to develop his reasoning powers, and to relat facts as cause and effect; lastly, the topical method demands fro the teacher careful daily preparation.

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The teacher is not to rely mainly upon the text-book, but he i to supplement this by information from other sources. Books o travel should be made one of the principal aids in teaching geo graphy; the study of the map should be subordinated to other im portant facts, such as soil, climate, productions, the characteristi plants, animals, industries, peculiarities and habits of the differen races and their religions.

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Of course, we are not to forget that the topical method renders its great service, mainly, in the selection and the arrangement of the material for study, but it does not exhaust the question of presentation of the material. Here the teacher, by the use of maps of different scales, often leads his pupils to erroneous ideas in regard to the relative size of countries and to wrong conceptions of their relative positions. This can only be avoided by according the globe a prominent place in the teaching of elementary geography. The teacher should use the globe to fix the idea of the shape of the earth as a sphere, and the division of its surface into oceans, continents, and the other divisions of water and land.

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Geike says: "The elevation of geography to the place which it ought to hold in the school curriculum appears to me a matter of vital importance, because it offers a cure for what I concede to be a radical defect in our educational method, namely, the want of any effective discipline in habits of observation."

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" It may be begun on the very threshold of school life, and may be pursued as to ever-increasing fulness of detail and breadth of view up to the end of that time; no other subject can for a moment be compared with it in this respect. It serves as common ground on which the claims of literature, history and science may be reconciled."

New York Teachers' Monographs.
. . . ARITHMETIC . . .
DECEMBER, 1899.

Number Work In The Primary Schools.

BY EDWARD D. FARRELL, Associate Superintendent of Schools, New York City.

MOST of the Arithmetics now in use are based on counting. They follow the methods elaborated by the early normal instructors. These teachers followed the historical development of numbers. Dr. Lardner explains the philosophy of their work by pointing out the first crude efforts of mankind to record aggregations of units; the introduction of symbols; the uniting and separating of quantities; the more complicated processes growing out of the fundamentals, and the ingenious methods of expressing large numbers.

The authors of the books referred to recognize the importance of synthesis, analysis and comparison. Synthesis and analysis are introduced simultaneously. Comparison follows quickly, but the fact that the objects used for the development of number-concepts—beans, buttons, tablets, pencils, etc.—resemble one another without approaching numerical equality, renders their comparison inexact. Such material only serves as a basis for mathematical reasoning when we begin with "Make believe these pencils are equal" or "Suppose these blocks are equal". The material referred to develops the qualitative idea of number. This idea is based on resemblance, while the quantitative is based upon equality.

The Grube method departs from the older one by introducing multiplication and division side by side with addition and subtraction. The material used is limited to a few simple forms, generally to the inch cubes. The eye and the hand are so constantly exercised in uniting and separating these blocks that the pupils find it hard to separate the idea of a unit from the idea of the ever-present block. This *fixed unit* becomes a bar to the logical development of ratio. A child gets his idea of the magnitude of a prism built of four cubes by counting the blocks rather than by comparing the prism with the small cube. He may be taught to say that one cube is one fourth of four cubes, but this is no more correct than to say that one man is one fourth of four men. What is meant is that the quantity of matter in one cube is equal to one quarter of the matter in four cubes. This is abstract teaching, while the lesson in hand calls for objective work.

Recent writers have cast aside the historical development of numbers and have introduced comparison side by side with synthesis and analysis. This departure compels the pupils to use counting and measuring from the first. They deal with similar units for counting, and with undivided magnitudes for measuring purposes. The moment that measuring is thus made an essential part of the number work, the idea of ratio may be introduced naturally and logically.

The Speer method is the best example of the new presentation. This author begins with indefinite relations expressed by the terms larger, largest, smaller, smallest, more, less, etc. Like the earlier writers, he presents at first the qualitative idea of numbers, but the work rapidly approaches definite relations. Once attention is centered on the absolute equality of objects, the pupil comes into possession of the quantitative idea of numbers and is ready to study number as a ratio. The objective presentation of this method calls for a set of forms that are "multiples" of one another, and each in turn is used as the base of comparison. The boxes of cubes, prisms, cylinders, etc., prepared as aids in teaching definite relations are valuable but not absolutely necessary appliances. The inches on a ruler, for example, may be used with equal advantage, and paper-folding gives a variety of measurements and comparisons with undivided surfaces.

We are apt to forget that children may obtain a fair education without devoting much time to numbers. It is also true that numbers may be taught in such a manner as to arrest mental development. A few years ago I prepared an article directing attention to the thought processes underlying every phase of primary number work. It dealt with the historical method of presenting numbers, but its substance is vital to every course of study and every method. It marks the line between rote teaching and rational teaching. It is here reproduced in a slightly condensed form :

The fundamental ideas of numbers must be developed by means of objects. When the child possessess the knowledge of one object and sees several of them in the same place, the likeness of the individuals gives rise to the idea of a collection. The uniting power in the child's mind is the common qualities associated with the name of the objects. When the child hears the phrases, one block, two blocks, and has these objects before him, he attaches a meaning to the words one and two. This mental act marks an important stage in the child's development. It implies that he has the power of making comparisons, and with this power comes the ability to recognize and measure larger collections.

The objective method of presenting numbers is the same for all below *ten*, and may be briefly stated as follows : Three blocks are put together in order to test the child's power of ready recognition, and the group may be separated into two blocks and one block, or the individual blocks may be widely separated and placed together again, so as to impress the fact that three is an aggregation of units.

The pupil must now be permitted to exercise his innate desire for investigation in order that he may become familiar with the facts presented by the teacher. The hand and the eye should be made to assist the understanding. He may thus be led to know and afterward to state that one block and one block are two blocks, that two blocks are more than one block, that one block is less than two blocks, that one block from two blocks leaves one block, that a group of three is greater than a group of two, etc.

Centering attention on the act of uniting or separating is an important element of the exercise, and requiring the child to tell what change has been made in the arrangement of the objects enables the teacher to develop the pupil's power of expression. Comparison is the thought process underlying the mechanical processess of uniting and separating, attention is the mental discipline, and the union of language and number binds the various exercises into systematic instruction.

Teaching *four* leads to the discussion of an important phase of mental development. After reviewing the facts that one block and one block are two blocks, two blocks and one block are three blocks, the words block and blocks, may be omitted, the statements becoming, One and one are two, Two and one are three. When the child becomes thoroughly familiar with the objects, attention drifts away from the things and centres upon the number. But the concrete should be kept prominent until the abstract has become sufficiently fixed in the child's consciousness to form a basis for future progress. When this point is reached it becomes natural for the child to say, Three and one are four, and when he sees three things and one thing he thinks four as a single impression without stopping to count the units. The moment he does this automatically, that is, without conscious thought, he is ready for the consideration of abstract numbers.

How many numbers should be taught by the use of objects has not been settled by experience. Use should be made of them long enough to satisfy the teacher on one important point—the power of quick perception. The numeral frame may be utilized for this purpose. Ordinary splints will serve to test how many objects a child can recognize without resorting to counting. The method of scoring used by lumbermen seems to sustain the view that five is the average limit of ready recognition. The game so popular among the peasants of Southern Europe, which consists in exposing for an instant a number of fingers, leads to the belief that one can form a quick perception of any number represented by the digits.

The word *four* must be taught as soon as four objects are presented, or if already learned by rote, it must be applied to this special aggregation of units as an element of the judgment, Three and one are four. This judgment is simply an expression of equality or virtual identity. The assertion adds nothing to the store of knowledge which we already possess except the application of the word four. It is a statement of explicit knowledge, but it contains an implied fact which the child does not at first recognize as existing in his mind. By reflecting that three is one more than two, and that the excess with the other *one* will make two, he draws the legitimate conclusion that two and two are four. What was implicit knowledge has now become explicit. The moment he deduces this fact he acquires fresh knowledge and makes an extraodinary advance in the direction of true education.

The importance of utilizing the child's love of investigation now becomes manifest. When he places three blocks in a group and one near by, and knows that there are four in all, he readily sees that moving one from the three and placing it beside the single block does not alter the total number. In this way he obtains the subject-matter for his first inference. The value of leading the child to draw every inference contained in the definitions of the numbers of the first two decades may be appreciated by comparing the number of facts that must be taught with those that may be discovered in the table of combinations:

COMBINATIONS OF THE DIGITS.

Facts to be taught.		Facts to be discovered.			
2	1 + 1				
3	1 + 2				
4	1 + 3	2 + 2			
5	1 + 4	2 + 3			
6	1 + 5	2 + 4	3 + 3		
7	1 + 6	2 + 5	3 + 4		
8	1 + 7	2 + 6	3 + 5	4 + 4	
9	1 + 8	2 + 7	3 + 6	4 + 5	
10	1 + 9	2 + 8	3 + 7	4 + 6	5 + 5
11	10 + 1	9 + 2	8 + 3	7 + 4	6 + 5
12	10 + 2	9 + 3	8 + 4	7 + 5	6 + 6
13	10 + 3	9 + 4	8 + 5	7 + 6	
14	10 + 4	9 + 5	8 + 6	7 + 7	
15	10 + 5	9 + 6	8 + 7		
16	10 + 6	9 + 7	8 + 8		
17	10 + 7	9 + 8			
18	10 + 8	9 + 9			
19	10 + 9				
Definitions, 18.		Inferences or discoveries, 36.			
Instruction.		Education.			

There are eight facts to be taught and twelve to be discovered before reaching ten. When ten is taught four additional facts may be discovered, making a total of sixteen inferences in the first decade. When we analyze the composition of the second decade we notice the importance of the ten. We do not get our knowledge of the teens by combining two digits. Language guides us in mastering the combination of four and ten, five and ten, etc. If taught on this basis all the combinations of the digits amounting to more than ten become subject to discovery. There are forty-five combinations of the digits taken two and two. Nine must be taught by definition, while thirty-six may be obtained by a process of reasoning. In other words, one fifth of the work must be done by the teacher and four fifths may be performed by the pupil through the exercise of his mental faculties.

The total number of combinations in the tabulated form is fifty-four, two thirds of which are inferences. In the whole range of primary studies it is difficult to find a more striking illustration of the value of the maxim: "Do nothing for the child that he can do for himself." Viewed from this standpoint, any method of instruction which induces the teacher to present each combination as a separate and distinct fact to be memorized prevents the natural development of the child's reasoning powers. It burdens his memory with isolated facts and compels him to undertake the work of advanced grades with an intellect that has been but partially awakened.

While the child is discovering these facts by observation and experiment he does not proceed in accordance with the usual forms of reasoning, but he is nevertheless guided by axioms which constitute an essential part of them. In arriving at the fact that two and two are four, the child starts with the definition, Three and one are four. By rearrangement of the four blocks he obtains two and two, and since he has neither increased nor diminished the number of blocks, he concludes that two and two are four. In other words, a definition and an observation supply the subject-matter for an inference. The basis of the observation is the axiom: "Things equal to the same thing are equal to each other." Further investigation will lead him to see that when equals are added to equals the results are equal, and to apply this knowledge in making other discoveries.

Before the study of the combinations has been completed the child shows himself capable of performing the three distinct acts which may be discerned in thinking—simple apprehension, judging, reasoning. The products of the first are clear and definite *ideas* of numbers; of the second, *truths* that result from the comparison of one idea with another; of the third, *conclusions* arrived at by comparing two ideas through their relations to a third. Each child that masters the definitions of the digits comes into possession of a mass of implied truth that may be transformed into explicit knowledge.

This is one reason why arithmetic can be made valuable for educational purposes. It supplies a field of investigation wherein the facts of which we are fully conscious may be employed in unfolding hidden knowledge.

Instruction upon the digits and their combinations cannot be called complete until the figures have been taught in the order of their significance. The practice of introducing them in the earliest stages of instruction is objectionable. They are arbitrary signs in which the child cannot find the units which are symbolized. On reaching the point where ideas take the place of objects, the way may be prepared for figures by introducing intermediate forms, known as *number-pictures.* In these the number of objects is indicated by means of lines, dots or stars. The child sees at a glance the representations of units included in the group, and the figure is afterward introduced as a shorter method of recalling or expressing the same quantity. The transition from things to suggestive forms and then to symbols is less abrupt than from the concrete to the symbolic.

In connection with figures it becomes necessary to use algebraic symbols to express the mechanical processes. The transition from *and* and *from* to the plus and minus signs resembles that from the object to the arithmetical characters. Children that learn these signs by a violent exercise of the memory are apt to miscall or misplace them. The difficulty may be avoided by introducing equivalent expressions, each marking a departure from the ordinary statement in the direction of arithmetical language, as:

Words: Four and one are five.
Figures: 4 and 1 are 5.
Technical terms: 4 plus 1 equal 5.
Symbols of processes: $4 + 1 = 5$.

The test of proficiency is the power to translate the symbolism into ordinary language.

Systematic instruction in ciphering should begin when the child recognizes when to unite and when to take away. To determine the operation he must employ his power of comparison. This power does not arise from the contemplation of numbers. It exists in the child's mind when he forms his first judgment. It is, however, exercised and strengthened by number work, and in return modifies the fundamental processes of arithmetic, and produces from them more complicated processes. For example, by comparing the cost of one apple and the cost of many in a series of results obtained by addition, we find that the labor may be reduced by considering the *number of times* the cost of the unit is repeated. This shortened form of addition becomes multiplication. In like manner, when equal numbers are successively subtracted, the work may be shortened by the division process.

While working with the combinations the general notion of the relation of numbers is obtained. By comparing two and ten we get the difference eight. By further comparison we discover that ten is five times two, that ten is ten times one, that one is a tenth of ten. These relations prepare the way for a clear idea of ratio. At this point we pass beyond the range of sense perceptions and depend upon practice with abstract numbers for the development of the decimal relation. This relation makes it necessary to consider the ingenious device which gives vitality to the Arabic system of notation. By placing a cipher at the right of the digit we can represent a new series of numbers, each one expressing ten times the value of the digit. The device of place gives rise to the distinction between intrinsic value and local value. By substituting the digits in series for the cipher, we produce the decades, and the child soon becomes familiar with the decimal ratio. Henceforth units may be changed or reduced to tens, tens to hundreds, and *vice versa.*

A moment's reflection will show how frequently reduction is employed in the four simple rules. The carrying process in addition involves a practical knowledge of reduction, and of the local value of figures. Reduction presents itself in multiplication the moment the partial product exceeds nine. In subtraction the reduction process moves from above downward. It is the basis of the most approved method of teaching this subject. In short division each figure of the dividend is considered a separate product. What to do with the remainders in the successive divisions is the most difficult problem. This is solved by reduction, and a memorized rule is rendered unnecessary.

When we consider two sets of numbers having the same ratio, we arrive at the idea of proportion. For example, If one orange costs five cents, what will eight oranges cost? Here the price increases as the quantity increases. The ratio of increase is the same in both cases. In the majority of the practical examples used in the primary classes three terms are given to find the fourth term; and the solution of the problem often involves the use of division and multiplication. When pupils are led to recognize the underlying principle, memory is relieved of a heavy burden.

It is not advisable to use the words ratio, reduction, proportion in the primary school, but children should be led to study numbers in the light of these relations, and to discover each principle by working a series of easy problems. A knowledge of these principles will enable the pupil to solve every problem *involving* the fundamental rules without memorizing a single formula. When they are not considered, the teacher is obliged to supply forms for the mechanical solution and formulæ for oral explanation. At the critical moment memory may fail to recall the essential element of the formula and the child is declared stupid, when in reality he is a fair specimen of the result of a faulty method of instruction.

These pages illustrate the line of progress from the elementary ideas of number arising from counting groups of objects to the fuller knowledge obtained by the comparison of their representative symbols, but counting is the basis of the system. In the beginning blocks or other materials stand out as individuals. They impress themselves as distinct unities. There is no logical method of introducing the idea of ratio while working with such material. The child may be taught to say that one apple is one fourth of four apples, but the statement contradicts observation and common sense. He sees that each apple is complete in itself and distinct from all other apples. All attempts to teach ratio with the fixed unit force the child instead of leading him. We do not arrive at the idea, four apples, by measuring them with one apple—we count them.

On the other hand, we cannot discover the length of a lead pencil by the counting process—we must measure it. By comparing it with another we find it natural to say that the first is twice as long as the second, or that the second is only one half the length of the first. A paper square may be folded into two equal oblongs. The square is twice the size of the oblong. Each oblong is one half the size of the square. A second fold gives four small squares. Now there are folds, corners, edges, squares, oblongs to be counted and measured. The large square is equal to the four small ones. Each small square is one half of the oblong, or one quarter of the large square—the ratio varying with the standard. The small squares are equal to one another, but the recognition of equality is no easy matter for the child. The mastery of this fact changes his view from the qualitative to the quantitative idea of numbers.

When *counting* and *measuring* are made the basis of number work, instruction will approach the ideal. Measuring will create more interest in the exercises than the most capable teacher has ever been able to infuse into counting devices. It will multiply the material at the teacher's command. It will magnify the importance of manual work, and allow the teacher to introduce calculations as incidental to grouping, building, counting, comparing, measuring, and expressing relations. Doing will become prominent and recording subordinate. Vision and manipulation, "the co-operative factors in intellectual progress," will thus be permitted to perform their full share of work in the primary schools.

The new course of study covers all the essential portions of the old one. It moves forward by areas rather than by lines, thus calling for the intensive study of each successive number. Wentworth asserts that a knowledge of the processes of arithmetic should be acquired by using small numbers, and each number should be treated in all its variations before the next highest is considered. The new course is in harmony with this assertion. It introduces the four rules into the lowest grade together with denominate numbers and easy fractions. Any attempt, however, to exhaust all the relations of a small number before considering the obvious relations of larger ones will invite failure. It is not the method that the child follows in his quest for knowledge.

The quantity of abstract work is reduced considerably by the new course but its distribution is somewhat uneven. Most of the work in subtraction, for example, is transferred to the first year grades. It seems that when each number is treated in all its variations, the limits, 10 and 20, impose too much work upon first year children. The early introduction of denominate numbers does not increase the burden of work since most of the *practical examples* called for by the old course involved the use of these units. The fractions in the various grades may be based on counting or measuring. If presented in connection with division they will offer no great difficulty; if taught as the expressions of ratios, they will require very careful handling.

The gravest defects in the arrangement of the old course were the omission of Federal money from the second year, and the massing of the tables of weights and measures in the third year grades where they were often memorized first and explained afterwards. The gradual introduction of the measuring units may establish actual weighing and measuring all along the line, and thus prevent the rote teaching of tables. In the upper grades, of course, these units should be gathered into tables and be committed to memory. In other words, the memorizing of tables should be the last stage of instruction.

The following comparative view of the two courses may assist teachers in modifying their working plans. It may also lead to a re-adjustment of the requirements of the successive grades. For purposes of comparison the forty-five combinations are considered in addition; the noughts are omitted from the table of differences in the first two decades, and the products referred to in multiplication and division are those of the multiplication table—to 100 for the new, and 144 for the old course.

Arithmetic. New Course. 1898.

FIRST YEAR. FIRST HALF.

Reading and writing numbers to 11.
Adding numbers to 11
25 Combinations.
Subtracting numbers to 11.
45 Differences.
Multiplying numbers to 11.
5 Products.
Dividing numbers to 11.
8 Quotients.
Denominate numbers.
Cent, dime; pint, quart.
Fractions.
½ of 2, 4, 6, 8, 10.

Arithmetic. Old Course. 1897.

SIXTH GRADE.

Counting by ones to 50, and by twos to 30.
Reading numbers to 50, and writing to 20.
Adding 1's, 2's and 3's to 20.
21 Combinations.
Subtracting ones from digits.
9 Differences.

FIRST YEAR SECOND HALF.

Reading and writing numbers through two places.

Adding numbers to 21.

20 Combinations.

Subtracting numbers to 21.

90 Differences.

Multiplying numbers to 21.

10 Products.

Dividing numbers to 21.

19 Quotients.

Denominate numbers.

Inch, foot, yard; dozen; dollar, half dollar.

Fractions.

½ of 12. 14. 16, 18, 20.

¼ of 4, 8, 12, 16, 20.

SECOND YEAR. FIRST HALF.

Reading and writing numbers through three places.

Examples to be given as dollars *or* cents.

Adding—amounts not to exceed 100.

Double column and carrying.

Subtracting below 100.

Reducing..

Multiplying to 100.

45 Products.

Dividing to 100.

26 Quotients.

Denominate numbers.

Minute, hour, day, week, month, year.

Roman numbers through XII.

Fractions.

½, ⅓, ¼ of multiples of 2, 3, 4, respectively, to 100.

SECOND YEAR. SECOND HALF.

Reading and writing numbers through four places.

Examples to be given as dollars *or* cents.

Adding to 1000.

Through three places.

Subtracting below 1000.

Process completed.

Multiplying—products not to exceed 1000.

Multipliers—one or two figures.

Dividing within 1000.

Divisor not to exceed 10.

9 Quotients.

Denominate numbers.

Gill, pint, quart, gallon; square inch, square foot.

Fractions. ½, ⅓, ¼, ⅕ of multiples of 2, 3, 4, 5, respectively.

FIFTH GRADE.

Counting by ones to 100, and threes, fours, fives to 50.

Reading and writing n through 100.

Adding 2's, 3's, 4's and 5's to

11 Combinations.

Subtracting 2, 3, 4, 5, from n to 21.

76 Differences.

Multiplying 2 by numbers bel

4 Products.

Use of signs, +, —, x, ÷.

Roman numbers through XI

FOURTH GRADE.

Reading and writing through three places.

Adding all the digits.

Single columns of seven figu

10 Combinations.

Subtracting 3's, 4's, 5's, 6's fr bers below 31.

14 Differences.

Multiplying 2 and 3 by num low 11.

13 Products.

Dividing numbers (above p through 18, by 2, 3.

13 Quotients.

Use of division sign.

Roman numbers to include L

THIRD GRADE..

Reading and writing through six places.

Adding—seven addends thr places.

Subtracting digits from below 100.

36 differences.

Multiplying through 6 times

28 products.

Dividing numbers (above and some tens) by 2, 3, 4, spectively.

42 quotients.

Roman numbers to include C

THIRD YEAR. FIRST HALF.

Reading and writing numbers through five places.
Adding to 10,000.
Addends not to exceed six.
Dollars *and* cents.
Subtracting to 10,000.
Dollars *and* cents.
Multiplying—products not to exceed 10,000.
Multiplicand three figures.
Multiplier two figures.
Multiplicand, dollars *or* cents.
Dividing—dividend not to exceed 10,000, divisor not to exceed 10.
Dividend—dollars *or* cents.
Reducing and remainder.
13 quotients.
Denominate numbers.
Federal money. Very simple exercises in the four rules.
Quart, small measure, peck, bushel; cubic inch.
Fractions.
⅔ and ⅖ of multiples of 3 and 5 respectively.

THIRD YEAR. SECOND HALF.

Reading and writing numbers through six places.
Adding to 100,000.
Addends not to exceed six.
Dollars *and* cents.
Subtracting to 100,000.
Dollars *and* cents.
Multiplying—products not to exceed 100,000.
Multiplicand three figures.
Multiplier two figures.
Multiplicand, dollars *and* cents.
Dividing—dividends not to exceed 100,000, divisor not to exeed 25.
Dividend, dollars *and* cents.
36 quotients.
Denominate numbers.
Inch, foot, mile ; ounce, pound, ton.
Fractions.
¼, ¾. ⅘ of multiples of 4 and 5 respectively.

SECOND GRADE.

Reading and writing numbers through six places.
Adding through six places.
Ten addends may be used.
Subtracting through six places.
Process completed.
Multiplying—multiplicand four figures.
Multipliers two figures.
21 products.
Dividing numbers (above products) by 7, 8, 9, 10, 11, 12.
66 quotients.
Denominate numbers.
Federal money.
Time.
Liquid measure.
Dry measure.
Roman numbers to M.

FIRST GRADE.

Reading and writing numbers through nine places.
Adding through nine places.
Addends not to exceed ten.
Subtracting through nine places.
Multiplying — multiplicand five figures.
Multiplier three figures.
Dividing—divisor not to exceed 25.
Denominate numbers.
Long measure.
Avoirdupois weight.
Roman numbers to year.

Arithmetic In The Primary Grades.

By GEORGE E. ATWOOD, Newburg, New York.

ARITHMETIC treats of numbers. But what is a number? Number is the idea of *how many* as determined by the relation of a quantity or magnitude to some measuring unit. It is the product of a judgment and exists only in the mind. It is not, as the books have said, a collection of single things. Each word on this page is a collection of letters or single things. Surely it is not a number, but let the relation of the collection of letters to a single letter as a measuring unit be determined by numbering or counting, there arises in the mind the idea of how many. A rectangular surface is a collection of single squares, but this is not a number. When the relation of the whole surface to any square as a measuring unit is determined, the mind perceives the how many. A rectangular solid is a collection of single cubes, but such a solid, though present to the senses, gives no idea of number until the relation of the whole solid to some cube as a measuring unit is known.

The teacher is at the outset confronted with the questions, how does this idea come into the child's consciousness, and by what process is the idea impressed upon the mind so that it shall aid in the acquisition of other number ideas? These are important questions, and from the teacher worthy of the name they will receive careful consideration. Number being the idea of how many as determined by the relation of a quantity or magnitude to some measuring unit, it is plain that the child must be led to perceive this relation. Relations are perceived as the result of observation and comparison. This implies that there must be something for the child to observe and compare. He may gain the idea of how many both from divided and undivided magnitudes. His first ideas of number are undoubtedly obtained from exposure to divided magnitudes, or groups of single things. There can be no question about this, and we must conclude that all primary ideas of numbers and their relations must be gained from repeated observation and comparison of divided magnitudes. Gradually, however, the child should be led to observe and compare undivided magnitudes, such as lines, surfaces, solids, etc. Before he can compare such magnitudes, he must image the division of them, and the power to do this belongs to a later stage of developments.

(*a*) GRADE 1 A.—FIRST YEAR—FIRST HALF.

1. Splints and other objects. Cent, dime, pint, quart. Reading and writing numbers to and including 10.

2. Adding, subtracting, multiplying and dividing numbers from 1 to 10 inclusive; at the end of the term partitive division without a remainder, as how many 4's in 8, and how many 2's in 6.

Fractions: ½ of multiples of 2.

WRITTEN.

3. Problems in addition, subtraction, multiplication and division, involving numbers from 1 to 10 inclusive; at the end of the term partitive division without remainder, as how many 4's in 8; 4–$\frac{8}{2}$.

Fractions: ½ of multiples of 2.

Most children entering this grade know one and two. They know one as a single thing, and they probably know two as *one* and *one*. They may not know the characters, or figures, used to represent these numbers. If not, the teacher gives them and shows how they are made. When they know two, begin the study of 3. Give each child 3 objects, and ask how many they have. They are likely to see the 2 and 1, and they may reply that they have 2 and 1. If no one can give the name of the new number, the teacher gives the name and also the figure that represents it. The pupils are then led to discover the combinations and separations; 2 and 1, 1 and 2, 3 less 1, 3 less 2, 3 less 3. The combinations and separations are to be taught objectively, and the children should discover them all for themselves under the careful guidance and questioning of the teacher. Never tell them any fact that they can be led to discover.

After the combinations and separations have been repeatedly discovered from the use of objects, give daily drill to fix thoroughly in mind all the facts learned. A very important part of the work in number is the constant application of all the facts learned in a variety of little problems. This application should be made as the facts are discovered by the children, but it should also be continued after the facts have been pretty well fixed in mind.

FOUR.

The method of teaching the combinations and separations in 4 is the same as that suggested in teaching 3. The facts to be taught are: 3 and 1, 1 and 3, 4 less 1, 4 less 3, 2 and 2, 4 less 2, 4 less 4.

The expression in arithmetical language of some of the facts learned may begin here. To represent what they have learned, a knowledge of some of the signs is necessary. Teach the meaning and use of the signs of addition, subtraction, and equality. These are taught as words are taught in reading. Get from the children such expressions as: 2 and 1 are 3, 2 and 2 are 4, 1 and 3 are 4, 3 less 1 are 2, 4 less 2 are 2, and write them on the board. Tell them there is a shorter way of writing them, and write each one using the signs instead of the words. When they understand the meaning and use of these signs, exercises like the following will provide seat work and will aid in fixing the facts in mind. These may be placed on the board. The children copy them and supply the missing number.

$2 + 1 = ?$
$1 + ? = 2$
$4 - 1 = ?$
$? + 3 = 4$
$3 - ? = 2$

$? - 2 = 2$
$4 - 2 = ?$
$1 + ? = 4$
$? + 2 = 4$
$1 + 2 = ?$

$4 - ? = 3$
$? + 1 = 4$
$1 + ? = 3$
$4 - 3 = ?$
$2 + ? = 4$

Ever guard against teaching only the language of number. Children should know that all this language is used simply to express something. Give frequent tests to determine whether they know the meaning of all they do. Make a figure and ask them to show that number of things. Show a number of objects and ask them to make the symbol. Give simple examples and require them to perform the operation in the solution with objects. Give examples and require them to indicate the solution in the form of an equation, using figures and signs. Make combinations and separations of objects and have them represent them, using figures and signs.

FIVE.

Take up the study of 5 and each of the following numbers as indicated in the foregoing, teaching only the additions and subtractions. The order to be observed is as follows: discovery of the facts to be taught, drill to fix the facts in mind, constant application of all the facts learned in the solution of thought problems. The value of this application cannot be overestimated, and it must not be neglected. These problems should involve all the facts learned. This is not likely to occur unless the problems are prepared in advance. The teacher should prepare sets of problems to follow the study of each number, including the facts in that number and those previously studied.

After the pupils know the meaning of the signs which have been taught, the drill on the additions and subtractions should not be given with the signs but as indicated below.

$$+\begin{array}{ccccccccccccccccc} 1 & 2 & 1 & 3 & 1 & 2 & 4 & 2 & 1 & 2 & 1 & 3 & 3 & 4 & 0 & 5 & 4 \\ 1 & 3 & 2 & 3 & 4 & 1 & 0 & 4 & 3 & 2 & 5 & 1 & 2 & 1 & 3 & 1 & 2 \end{array}$$

$$-\begin{array}{ccccccccccccccccc} 2 & 4 & 5 & 6 & 4 & 5 & 6 & 5 & 6 & 3 & 4 & 5 & 6 & 3 & 4 & 5 & 6 \\ 1 & 2 & 5 & 3 & 1 & 2 & 5 & 1 & 4 & 1 & 4 & 3 & 1 & 2 & 3 & 4 & 2 \end{array}$$

These exercises include all the additions and subtractions below 7.

At any stage of the work, the meaning of one-half may be taught. All fractional ideas should be gained from the division into equal parts of something which is in itself a unit, such as a narrow oblong or a circle. After the idea of one-half is clearly defined in the mind as one of the two equal parts of anything, the child readily applies the idea in finding half of numbers. Pint and quart and the number of pints in a quart may also be taught at any time, preferably at the beginning of the work.

(*b*) GRADE 1 B.—FIRST YEAR—SECOND HALF.

1. Splints and other objects. Inch, foot, yard, dozen, dollar, ¼ dollar, ½ dollar.

Reading and writing numbers: Through two places.

ORAL AND WRITTEN.

2. Adding, subtracting, multiplying and dividing numbers to and including 20; no remainder in division.

Fractions: ½ and ¼ of multiples of 2 and 4, respectively.

Through the sense of sight the mind can perceive the idea of how many, or know number, only to a very limited extent. Probably five or six is the limit the mind knows and estimates numbers by a grouping process. In the decimal system of numbering, ten and its multiples are the groups which the mind adopts in learning number and thinking of number.

The method of work in this grade will differ somewhat from the method pursued in the preceding grade in that there will be less objective work except in teaching facts of measure and fractional ideas. The children know 11 as 1 ten and 1, 12 as 1 ten and 2, and so on. To complete the preparatory work for written addition and subtraction, they must know all the combinations of two numbers less than 10 that make 11, 12, 13, 14, 15, 16, 17, 18, and the corresponding subtractions.

After the combinations of 12 have been taught, each intch, foot, yard, dozen, the number of inches in a foot, and feet in a yard. Teach here also the meaning of 1 fourth. See suggestions for teaching fractions in preceding grade.

A most important fact of the work in this grade is the daily application of the facts learned in the solution of practical problems. Variety of form and statement in these problems is desirable, and they should frequently involve the facts of measure which have been taught.

(*c*) GRADE 2 A.—SECOND YEAR—FIRST HALF.

1. Minute, hour, day, week, month, year.

Roman numbers through XII.

Reading and writing numbers: Through three place; $ or cts.

ORAL.

2. Adding, subtracting, multiplying, and dividing numbers to and including 40; neither multiplier nor divisor to exceed 10; no carrying in multiplication or division; no remainder in division.

Fractions: ½, ⅓, ¼ of multiples of 2, 3 and 4, respectively.

WRITTEN.

3. Addition: The sum of addends not to exceed 100.

Subtraction: Finding the difference between numbers below 100.

Multiplication: Products not to exceed 100

Division: Dividends not to exceed 100, the divisor not to exceed 6; no carrying, no remainder.

Fractions: ½, ⅓ and ¼ of multiples of 2, 3 and 4, respectively.

Pupils know that 6 tens are sixty, 7 tens seventy, 8 tens eighty, and so on. Tell them that 10 tens are one hundred. Show 1 hundred 4 tens and 8 ones and express the number in figures, leading pupils to see that a figure in the third place expresses hundreds. Dictate numbers to be written as so many hundreds, tens, and ones, and when they are written, require pupils to read them in the ordinary way.

All the additions of two numbers less than 10 and the corresponding subtractions have been taught, also the multiplications and divisions up to the limit of 20. The multiplications and divisions up to the limit of 40 are to be taught. These number facts must be memorized. They can be acquired in no other way. Each division should be associated with its corresponding multiplication. When the child knows that seven 3's are 21, he also knows the corresponding division, 3)21.

The oral work of this grade will include:

1. A daily drill on the additions which have been taught. These are to be placed permanently on the board promiscuously arranged, each one in both forms, and pupils will name the sums rapidly at sight.

2. A daily drill on the subtractions. Keep these on the board and driil on them as on the additions. Teachers are urged to train their pupils to subtract by thinking what number added to the subtrahend gives the numeral. If they are subtracting 6 from 13, they should think 6 and 7, and simply say 7. The purpose of this is to associate 6, 7, and 13 in the mind.

3. A daily drill on the multiplications and divisions. But few of these have been taught. The new ones are to be taught, a few at a time. These with the ones previously taught are to be placed on the board, the line of multiplications with the sign before it, and the divisions in the form, 5)35. In teaching the multiplications, we greatly prefer to teach four 8's, seven 5's, rather than four *times* 8 and seven *times* 5; also 7's in 49 rather than 49 divided by 7.

These drills should be given as often during the day as time will permit and continue but a few minutes at one time. The undivided attention of the whole class is desired, and any pupil must be ready to take up the work instantly at any point. If such interest and attention can be secured, all pupils are equally benefited, whether they recite or not.

4. Finding fractional parts of numbers and measures, as 1 half of 18, 1 third of 24, 1 fourth of 36, 1 half of a quart, foot; 1 third of a yard, 9 inches, a foot, etc

5. Daily application of the facts learned in the solution of problems. In preceding grades, most of this work has involved only addition or subtraction. As the multiplications and divisions are taught, this work must include these new facts. This is a very important part of the work, and teachers are urged not to neglect it.

WRITTEN WORK.

The course of study requires addition with sum not exceeding 100. The number of addends is not specified, but it is presumed that there may be as many as four. The reason for carrying must be taught. Take, for example, 4 tens and 7 ones in one hand, and 3 tens and 8 ones in the other. Express the numbers on the board. Ask some pupil to put the splints together and give you as many tens as he can, He sees that from the 7 ones and 8 ones united he can make a ten, and he gives you 8 tens and 5 ones. Let him express what he has below the two given numbers. Addition is but symbolizing this process, and the work should be done with splints until he is able to imagine the real process from the symbolized one. To know what to carry, he must be able to analyze quickly the sum of any column. Name numbers as 14, 18, 23, 36, 47, etc., and let the children tell of what they are composed, as follows: 1 ten 4 ones, 1 ten 8 ones, 2 tens, 3 ones, etc.

The course of study may be interpreted to include column addition. At any rate, preparation for this most important work ought to begin here. The children are supposed to know pretty well all the combinations of two numbers less than 10, and at first thought we may think they have all necessary preparation for this work. But there are difficulties here for the child, which it takes time to overcome. His work in addition thus far has been limited mainly to the addition of two numbers, both of which have been expressed. He has therefore been aided by his vision. In column addition, after he has added the two numbersat the foot of the column, one of the numbers in each step thereafter must be carried in the mind. In other words, the child must think it. Again, the sum of the two numbers added has never exceeded 18, and he has not been required to go from one ten to another. Perhaps the most serious difficulty is in determining whether the sum goes to the next ten or not. He knows that 2 and 8 are 10, but it takes some time for the child to grasp the idea that 12 and 8 are 20, 22 and 8 are 30, 42 and 8 are 50. He knows that 4 and 7 are 11, but

time to fix in his mind that 14 and 7 are 21, 34 an
view of these difficulties, there should be as fev
, and it is decidedly better to limit the number o
the column. The columns given below, if adde
, contain no combination greater than 11, that is
of the sum at any point with the next figure in t
ot exceed 11.

'reparatory to this work let pupils name these sums

5	6	8	8	8	8	8	8	8	8	8	7	7	7
10	10	10	12	23	32	13	22	43	52	33	13	24	43
7	7	7	7	6	6	6	6	6	6	6	6	5	3
33	14	23	44	14	25	44	15	24	35	34	25	15	28
3	4	4	4	4	4	4	4	4	2	5	3	5	3
18	16	27	36	17	26	37	46	47	18	26	37	16	27

8	7	8	6	4	7	6	7	5	8	5
2	5	7	6	5	2	3	2	5	2	6
3	4	4	3	7	5	6	8	6	7	8
6	3	3	8	4	6	2	3	5	8	1
3	5	6	3	3	2	4	2	3	3	6
7	3	4	5	6	2	5	6	4	4	5
6	2	5	4	5	2	6	2	7	5	6
5	7	2	6	6	7	3	6	8	7	[illegible]
6	8	2	5	8	8	2	3	1	4	
3	3	7	4	1	3	8	7	6	7	
4	4	5	5	4	5	1	4	5	2	
6	5	6	3	7	4	4	3	5	3	
5	7	7	6	7	6	4	5	4	6	
6	4	8	2	3	5	3	2	1	2	

Place these columns on the board and devote a fe
is exercise daily through the grade. There is litt
upils will memorize any of them. This work will
first, but if persevered in, nearly every member o
ld them very rapidly. In this work pupils should
ms as they add. About the only help the childr
is exercise is a frequent reminder, when they h
d a 7 give a 1, a 3 and an 8 give a 1, a 2 and an 8

The course also requires written subtraction.
lints, the process is easily taught. As no book
es, both for addition and substraction must be
dictated to the class. Besides the examples gi
ve three or four others daily, similar to the ora
t with larger numbers, for written solution, s
g addition and some subtraction.

(*d*) GRADE 2 B.—SECOND YEAR—SECOND HALF.

1. Gill, pint, quart, gallon, square inch, square foot.

Reading and writing numbers: Through four places; $ or cts.

ORAL.

2. Adding, subtracting, multiplying and dividing numbers to and including 50; neither multiplier nor divisor to exceed 10; no carrying in multiplication or division; remainder in division.

Fractions: ½, ⅓, ¼, and ⅕ of multiples of 2, 3, 4, and 5, respectively.

The oral work of this grade is a continuation of the work of the preceding grade with the new multiplications and divisions to be taught. New facts of measure and some additional fractional units are also to be taught. Suggestions for this work have already been given. The daily drill on this work is to continue, except that less attention is given to the additions. The needed drill in this will be had in the exercises in column addition described below. The work on the divisions thus far has included only the exact divisions. Preparatory work for short division is to begin here. The drill on the divisions must include the division of every number between 3 and 20 by 2, every number between 4 and 30 by 3, every number between 5 and 40 by 4, and so on. In these drills simply require pupils to name quotients and remainders, as 3)17, 5-2; 4)29, 7-1. The application of their knowledge in the solution of concrete problems is emphasized in this grade, and teachers are urged to make this a prominent feature of the work.

WRITTEN.

3. Addition: The sum of addends not to exceed 1,000.

Subtraction: The difference between numbers below 1,000.

Multiplication: Products shall not exceed 1,000.

Division: Dividends not to exceed 1,000, the divisor not to exceed 10; no carrying, but there may be a remainder.

Fractions: ½, ⅓, ¼ and ⅕ of multiples of 2, 3, 4 and 5, respectively.

When pupils can add the columns previously given with a fair degree of rapidity, make new columns containing the more difficult of these combinations and the new combinations 6 and 6, 7 and 7, 8 and 8. If they can add the first columns rapidly, they have learned how, and they will add the new columns almost as rapidly from the start. In the next columns, include 8 and 4, 4 and 8, 5 and 7, 7 and 5. Next include 8 and 5, 5 and 8, 7 and 6, 6 and 7. Next include 8 and 6, 6 and 8, 8 and 7, 7 and 8. Teachers will observe that all combinations have been included except those in which one number is 9. The last columns for drill will contain many 9's and, like other columns, the more difficult of the combinations previously included. Teachers have simply to remind pupils that when one figure is a 9, the unit figure of the sum is 1 less than the figure added to the 9 ; and if the preceding work has been well done, will be surprised how rapidly the children will add these columns. All the examples in addition and subtraction sh include only the combinations which they have been drilled up

The course of study calls for written work in multiplicatior division, multipliers and divisors not to exceed 9, products dividends not to exceed 1,000. By the requirements of the work, pupils are supposed to know only the multiplications divisions within the limit of 50. Hence the work in multiplic: and division should involve only what they know. It may inc all the 2's, 3's, 4's, 5's, 6's to 6 times 8, 7's to 7 times 7, 8's to 8 t 6, 9's to 9 times 5. The examples must be placed on the board, each day's work must include the thought problems.

(e) GRADE 3 A.—THIRD YEAR—FIRST HALF.

1. Quart, small measure, peck, bushel; cubic inch.

Reading and writing numbers : Through five places ; $ and

ORAL.

Adding, subtracting, multiplying, and dividing numbers tc including 75 ; neither multiplier nor divisor to exceed 10 ; no c: ing in multiplication or division ; remainder in division.

Fractions : ⅔, ⅖ of multiples of 3 and 5, respectively.

Review of preceding grades.

Continue the drill on the multiplications and divisions, in(ing the new ones to be taught, as in preceding grades. No fu drill should be necessary on the single additions and only occasi drill on the subtractions. The work on the divisions should inc the divisions with all remainders, in which work the pupils sh simply name the quotients and remainders. This is important paratory work for short division. There must be daily applic: in concrete problems of the facts learned, including the addit subtractions, multiplications, divisions, fractional ideas, measures.

The writer would make the comparison of numbers and m: tudes a prominent part of the oral work of this grade. The pur of these exercises are the perception of relations and the dev(ment of the imaging power. At first they compare magnit present to the senses, lines, surfaces, solids, measures, and fracti units. Require pupils to tell how many times the second tern first is or what part of the second term the first is. Here are a of the many questions that may be given : Compare : a yard a foot. 2 feet with a yard, a pint with a quart, a gallon wi quart, a square in with a 2-inch square, ½ with ¼, ½ with ¾, ⅗ wi etc. The pupil must soon pass to the comparison of images of s(magnitudes, that is, he must make these and similar compari without the magnitudes before him. But as the principal part student's work in mathematics and the application to practical life must from necessity be in the comparison of imaginative magnitudes, the cultivation of this highest type of imaging power must receive careful attention. These exercises will surely induce the habit of imaging the magnitudes in any arithmetical problem which he is required to solve. With these imaged magnitudes in mind, he compares them, perceives the relations, and the solution is but the expression in symbols of the relations perceived.

WRITTEN.

3. Addition: The sum of addends not to exceed 10,000; number of addends not to exceed six; $ and cts.

Subtraction: The difference between numbers below 10,000; $ and cts.

Multiplication: Products not to exceed 10,000; $ or cts.

Division: Dividends not to exceed 10,000, the divisor not to exceed 10; with carrying and remainder; dividend $ or cts.

Very simple written exercises in adding, subtracting, and multiplying amounts in Federal money.

Fractions: ⅔, ⅖ of multiples of 3 and 5, respectively.

Review of preceding grades.

The written work of this grade is a continuation of the preceding grade with the use of larger numbers. Addition should receive special attention. Besides the examples involving addition, there should be daily drill on columns of not less than twelve figures. We would advise reviewing the several steps in teaching addition outlined in a preceding grade, this review to be followed with columns containing any of the combinations.

The course requires the application of the fundamental rules to U. S. money. The three examples given below are types of examples in which it is required to multiply a sum of money, expressed wholly or partly in cents. Lead pupils to notice carefully how each multiplicand and product is expressed.

1. $ .86x6.	2. $1.65x8.	3. $ .06x468
$ .86	$1.65	468
6	. 8	$ .06
$ 5.16	$ 13.20	$ 28.08

In the third example, $.06 is really the multiplicand; but since the product of two numbers is the same whichever is used as multiplier for convenience, the smaller number is always used as multiplier.

The three examples given below are types of examples involving division of U. S. money. These should also receive careful attention.

1. Divide $38 into 8 equal parts.
2. How many 6 cents are there in $21?

3. How many 7 cents are there in $19.95?

$$\begin{array}{rrrrrr} 8 & \underline{)\,\$38.00} & \qquad \$.06 & \underline{)\,\$21.00} & \qquad \$.07 & \underline{)\,\$19.95} \\ & \$4.75 & & 350 & & 285 \end{array}$$

In the written work as well as the oral, there should be a constant effort to develop the imaging power of the pupil. He must see the quantities and magnitudes which are involved in the problems.

(*f*) GRADE 3 B.—THIRD YEAR—SECOND HALF.

1. Inch, foot, yard, mile; ounce, pound, ton. Review tables.

Reading and writing numbers: Through six places; $ and cts.

ORAL.

2. Adding, subtracting, multiplying, and dividing numbers to and including 100; neither multiplier nor divisor to exceed 12; no carrying in multiplication or division; but remainder as fraction, in division.

Fractions: $\frac{3}{4}$, $\frac{3}{5}$, $\frac{4}{5}$ of multiples of 4 and 5, respectively.

Review of preceding grades.

The character of the oral work in this grade is the same as in the preceding, except that it is extended. Teachers are urged to consider carefully what has been said concerning the work of the first half of this year. The work on comparison should be considerably extended so as to involve more difficult relations, especially in the comparison of fractional units, surface and volume measures, and the various units of the measures.

WRITTEN.

3. Addition: The sum of addends not to exceed 100,000; number of addends not to exceed six; $ and cts.

Subtraction: The difference between numbers below 100,000; $ and cts.

Multiplication: Product not to exceed 100,000; $ and cts.

Division: Dividends not to exceed 100,000; $ and cts; divisor not to exceed 25, with carrying and remainder as a fraction.

Simple exercises in writing, adding, subtracting, multiplying and dividing amounts in Federal money.

Fractions: $\frac{3}{4}$, $\frac{3}{5}$, $\frac{4}{5}$ of multiples of 4 and 5, respectively.

Review of preceding grades.

The written work of this grade is a continuation and extension of previous work. As in other grades, it must include examples for process in the fundamental rules and the so-called concrete problems. The drills which have been called for in column addition have required the addition of each figure singly. This is necessary to master the several combinations. By this time, however, there should be an effort to secure even greater rapidity in this most important arithmetical process. It is easy to add by 10's, and children should be trained to look out for them in adding. If the sum at any point is 38 and the next two or three figures make 10, the pupil should think 38, 48. It often happens that the first and second figures above do not make 10, but the first and third do. In such a case the pupil should add the second figure and then add the 10. For example, he may have 28 and the next figures in order are 4, 7, 6. He should think 28, 35, 45. When the sum at any point is even tens, as 30, 40, 70, etc., the next addition should always take in the next two figures and often the next three and four. It is even desirable to get even tens, and this is often possible by taking the figures out of order. If the sum is 24 and the next figures in order are 7, 6, 9, the pupil should think 24, 30, 46, first adding the 6 to make even tens and then adding the 16. These columns will perhaps better illustrate the idea. The small figures at the right indicate where the pupil should think sums.

9^{65}	2^{50}	8^{54}	7^{65}	9^{66}	6^{57}	4^{65}	9^{78}	4^{40}	8^{56}
7^{56}	6^{63}	6	6^{50}	4^{57}	9^{47}	4	6^{60}	7^{33}	3^{40}
6^{49}	7	3^{40}	8	6	4	7	9	8	8
9	6^{48}	8^{37}	3^{44}	9^{47}	3^{38}	4^{50}	8^{34}	7^{36}	6^{37}
8^{34}	6	3^{20}	8^{34}	9	5	2	8	8^{20}	8^{27}
6	6	9	7	9	2	4	8	9	4
20	30	17	26	20	28	40	30	12	19

To be able to apply these suggestions, it is absolutely necessary that pupils see combinations as wholes instantly. They must see 6 and 8 as 14, 4 and 6 as 10, 8 and 7 as 15, just as they instantly recognize combinations of letters as words. After some practice in applying these suggestions, pupils should also be trained to add at once any two figures whose sum is less than 13. In adding 9, the unit figure of the sum is 1 less ; in adding 11, it is 1 more ; in 12, it is 2 more. When the unit figure of the sum is 8 or 9, and the next two figures are above 6, it is easier to separate the first number, taking out enough to make even tens, and then add at once the remainder of the first number with the second. Notice the following :

8^{43}	8^{56}	5^{54}	4^{55}	4^{64}	7^{54}	6^{58}	9^{67}	9^{66}	5^{68}
4	3	3	7	3	2	6	2	3	4
7^{33}	3^{45}	8^{46}	7^{44}	8^{57}	7^{45}	7^{46}	7^{56}	6^{54}	4^{59}
4	6	4	5	3	4	5^{30}	5	3	7
5^{22}	8^{36}	9^{34}	4^{32}	5^{46}	7^{34}	6	8^{44}	8^{45}	7^{18}
3	9^{20}	7^{20}	4	4	8^{27}	3	3	8^{30}	5
14	19	18	24	37	19	25	33	29	36

As a rule pupils take great delight in seeing how easily and rapidly they can add columns.

The application of multiplication and division to United States money, as involved in the type forms, given in the preceding grade, should receive careful attention.

Number Work In The Kindergarten.

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THE daily kindergarten program is made up, in many ar varied arrangements, of a morning talk, a gift, an occup tion, stories and games; these are associated with natu study, drawing, music, etc., as well as language and principles number. All furnish material for the awakening and developi of the number faculty. For instance, in one of the first morni talks, the family is of greatest consideration. The children's min turn homeward to father, mother, brothers and sisters, and a lo thought is sent to each. Little fingers delight to play substitu for them.

How simple all this is and how naturally it is learned that t hand family consists of five members; four are grown, while o the dear little baby, is quite unlike the rest. The analysis of t number under consideration is here commenced, similarities a differences are also noted. Father and brother are taller th mother and sister, while baby's petiteness contrasts her strong with each.

Contrast, attention, perception and comparison are stro factors in impressing number value. It is not figures and signs th one seeks, but values and their relative connectedness with o another. Many simple stories and plays which will not tax t ingenuity of the teacher to any extent or stretch the imagination the child too far, will serve to discover the various combinations values reducible from the number five.

Breakfast is in preparation for the family our hand represen Notice the preparations: tables are folded, circles, cut from pap or circular tablets, serve as plates; chairs are cut or folded. Th training of eye, ear and hand accompany the impressing of numb During the play a few simple questions may be asked, as: H many plates shall be placed at the table? How many chairs? H many for each person? Let all this be acted out and make t bringing of each object to its own place forcible enough to impr its value. John arranges the chairs. *One* chair for papa, anot *one* for mamma, still another, a strong *one* for tall brother, et until they are all placed at the table, five comfortable chairs for f kind people.

It is not meant that all this is to be forced upon the child finger plays, or based on an analysis of the number five. It is o a simple illustration of the work that may be very gently a quietly accomplished as the child plays day by day with bloc balls, sticks, rings, shells, flowers, etc. Underneath the chil play lies the kindergartener's clear, fixed purpose for the logi training of his tender mind.

Five slates may be five soldiers. The play with the slates may recall the finger play also; one soldier will not make so strong an appeal to the child, while a band or company will awaken a keener interest.

Interest is one of the strongest factors in attention and lies in connection, not in isolation. "The first procedure of the mind in the elaboration of its knowledge is always analytical, it descends from the whole to the parts," so William Hamilton says.

Let the play bring in diversity of color, using one blue, two red and two white slates. Children like to arrange objects according to their color and kind. But in number work color should be used sparingly, otherwise it may attract the mind from number, and it is best to eliminate it when leading directly to the abstract. Soon the line of parade is drawn up, the captain, in blue, is followed by the four soldiers, two in white and two in red. Rhythm will add greatly to the play and deepen the impression both of color and number. It is often well to let the play crystallize into a little song.

The making of chains, stringing of beads, and the sorting games hold countless opportunities for number work. First, various kinds of objects may be sorted and arranged, later objects of one kind, but differing in form and color. A pan holding shells, acorns, marbles, buttons, etc., is given to the child in small quantities at first, lest he become confused. Let the child arrange in groups according to the kind. Marked differences in the objects at the beginning will help the child in the grouping of them, later the contrast need not be made so strong. Then it is better for him to sort, count and group different kinds of seeds, or different kinds of leaves, fruits, etc, On his table is found one marble, two acorns, three buttons, four shells. Froebel says, "Join the visible with the audible." Applying this, John tells what he has. Let each child's material differ from his neighbor's in quantity, so encouraging him to think and give expression to the thought in his own way.

Gradually confine the child's attention to number by withdrawing little by little strong contrasts; eventually, he will reach the abstract. Vivify as far as possible by drawing all impressions gained. Expression by hand, as well as lip, is indispensable in mental development. In baby days fact is far more important than form. The child who illustrated "The Old Oaken Bucket" by drawing three separate buckets on his paper had failed to comprehend quantity, even though the quality of his lines was good.

When the child has mastered to some extent the value of one, he is ready for his map weaving and the oft repeated "Over one under one" will not be to him meaningless. More-intricate patterns will require greater knowledge and deeper thought, as his mat, with its successions of ones, twos and threes, etc., becomes to him a pictured multiplication table. Folding, cutting, pasting, sewing, as all occupation work, may be made conducive to the impressing of number.

In the study of the gift-plays touches of number work are found at every turn. Point work, sticks, rings, tablets, abound with suggestions for number work. The building gifts, especially the third, fourth and fifth, lead into deeper and more abstract facts. The division of the cube, the number of such divisions, the grouping and rebuilding of the parts, all speak of number values to the child.

Whatever accuracy of touch, keenness of perception, strength of discernment and power of expression may be gained through play with blocks, none of these acquirements outweigh the advantages the blocks afford for strengthening, developing and establishing number conceptions in all the processes of number work.

The fifth gift is especially fitted to lay a deep foundation for work in fractions. Readily the child grasps the idea of one-half, or half of one half, or a quarter, from the division of the tiny cube into these parts. He plays he is a mason with four whole cubes to place as a foundation for his house, then builds on; perhaps he slips a rubber band about this group and places it as "a four" instead of four blocks. Then a rope (rubber band) securely fastens *one* block with *one more*, and he hoists this until "the two" rests upon "the four." In reality he is saying four and two are six. Let him add one-half block more, and the story runs six and one-half are six and a half. Add another half block to the building, and the whole structure shows to the child $4 + 2 + \frac{1}{2} + \frac{1}{2} = 7$. Proceed by adding blocks of the desired size until the design of the building is completed. Unfasten the rubbers and play a game that will analyze the numbers six or seven into their various combinations. The mason's work is tested, blocks are examined one by one, two by two, three by three. As he takes the building down he may discover how many threes there were, how many fours, or fives, and so on.

All this training must be very gradual and pleads for a year at least in the kindergarten in order to gain a thorough grounding in number, which is so necessary a factor in education and life. Facts thoroughly grasped and vivified by various means of repetition in the concrete become knowledge to the child, which he may apply on different lines and express in a briefer manner (figures) than illustrative drawing and language afford.

As soon as the child is able he will gladly accept this more direct and conventional way of expressing his understanding of number values; and figures will be only a means to the end for expressing conceptions thoroughly assimilated and grown into knowledge. Thus, the symbol of the figure will be lost for the values and the combination of values it represents.

Primary Arithmetic.

By Wm. M. Speer. Assistant Superintendent of Schools. Chicago, Ill.

I HAVE been asked to make some practical suggestions in regard to elementary mathematical work.

What is the means of practical work in mathematics? Primarily the same in all subjects,—to bring the pupil into living contact with realities. Such contact is assured only by a presentation which permits natural mental action.

The teacher whose study of mathematics has been a study of number is at a loss when she seeks to give opportunity for growth into mathematical ideas.

It is not strange that vigorous protests have been made against the waste of energy in teaching pupils to "cipher" and trying "to train them to reason" in arithmetic. The remedy does not lie in this device or that, but in ceasing to present language as if it were the reality, in awakening to the fact that if we would open the way for mathematics we must open the way for experiences which cause 7, 5, 4, ½, ⅛, etc., to be used as expressive of quantitative relations, just as the terms, good, red, take on meaning through repeated experiences. Newton urged the danger of departing from intuitive methods, and his foresight is shown in the fact that the procedures of modern schools indicate that we are scarcely aware of quantitative relations as objects of study.

For the child to grow into appreciation of these relations there should be an environment favorable for sensory and intellectual experiences of relative magnitude. This requires choice of material in which mathematical relations are not so disguised as to be inaccessible. It requires also opportunity for contact with reality through the learner's own acts of analysis and synthesis. We take away this opportunity when we present the elements of things instead of the things themselves. When the analysis of another's mind is thrust upon the learner in the beginning, as it is when we give him parts to be counted, instead of wholes to be compared, an attitude is induced unfavorable to activity of sense and mind. The parts are made so prominent that only with difficulty are the wholes brought into consciousness, and if their relation is realized at all it is by a wasteful draft upon the energy.

Some inquire how the child can compare 12 and 6, 28 and 14, 100 and 50 before he has possessed himself of these by counting? Would he more easily grow into a sense of the likenessess and differences between an oak and an elm by comparing the trees from time to time, or by naming isolated parts as roots, bark, trunk, leaves, etc.? The child hears the word tree, oak, elm, large, 28, 14 used in such a way that he uses them unhesitatingly in thinking. The notion that a name should be withheld when needed, or until every relation in which it can be used is known, or that it must be presented apart from the thing, or out of relation with other things are fancies born of formal training and nourished by artificial separation of thought and expression. Keeping in view the reality, the presentation becomes simple. Focus attention upon relative magnitude, associate the language with the thing just as we do in other subjects.

When the spontaneons activity of the pupil leads it beyond the simpler relations expressed by more and less, longer, shorter, etc., the way should be open for attention to the definite relation of equality. Unconsciously the pupil has dimly perceived this idea.

He could not assert that *a* is larger than *b* without the vague analysis which implies that *b* equals a part of *a*. This unconscious perception will not suffice for the equation upon which mathematical constructions rest, but it is the mind's mode of advance to the thought of exact likeness. Experiences which develop this underlying mathematical idea should be many and varied. This does not mean wearisome drill upon equal things, but concrete work in which this experience is often repeated. It is such experience that gradually vitalizes symbols and enables the pupil to see equality of relations through them as surely as through things and images. From the relation of equality, the advance should be to simple ratios and not those reached by many separate acts of analysis. Thus, 2 $\frac{1}{2}$, 3, $\frac{1}{3}$, $\frac{2}{3}$, $\frac{3}{2}$, 4, $\frac{1}{4}$, $\frac{3}{4}$, $\frac{4}{3}$, etc., should be seen in many things before such ratios as 14 or 28 or 100 are presented. The ratio 2 may be seen as readily between magnitudes thought of as 28 and 14, 100 and 50, as between magnitudes called 2 and 1, if the child has not been confused by an environment which has caused him to approach these magnitudes through their parts.

From the perception that the ratio of 56 to 28 is 2 and, of 28 to 14 is 2, the child moves readily to the inference that the ratio of 56 to 14 is 4. The need of drill upon many separate facts disappears when the mind is left free to approach reality through ensemble and not through detail.

If we believe that appreciation of a picture or a poem comes through absorbing the mind in its details before it has been seen as an organic whole, if we believe that the child loves to act upon elements which the adult has dissociated from the concrete whole then it is not strange that we make counting the basis in arithmetic. But if we believe that in all thinking, whatever the mind centers upon becomes the whole, that it can relate only what it grasps, we shall in elementary mathematical work present co-existence, co-extensive magnitudes, thus affording the same opportunity for analytic-synthetic action in arithmetic as in other subjects. The learner then makes the quantity discrete through his own analysis, through his own intellectual acts, hence he does not lose his grasp of the things to be compared.

The simplest comparison implies co-existent wholes. The object is to discover the relative magnitude of the wholes under consideration. All the separating and counting, all the intermediate steps have this end in view. If either of the related terms be lost sight of there can be no thought of their relative magnitude, their ratios cannot be seen, and the intermediate steps serve no purpose. Why not present as a whole that which we wish to be grasped as a whole? Vicarious analysis secures nothing but counterfeit exactness, forms severed from reality. It makes growth into mathematical ideas difficult and wasteful if not impossible.

To this article I append an outline which suggests an order of work. The condition of the child should guide the teacher from first to last. To talk about ratio as the essence of mathematics and then engage the child in drill upon language is idle. The same care should be exercised at every stage in educating by means of mathematics, that is exercised in the use of other means. The mere intellectual assent to ratio as the basis does little if we do not act upon it and provide "subject matter developing in material, method and conception." If we attribute to the childish mind the sense of proportion, of ratios, which belongs to the adult and so neglect the manifold experiences, the doing, the acts of association and dissociating necessary for developing these ideas we cut the child off from contact with mathematics.

SUGGESTIONS FOR ELEMENTARY MATHEMATICAL WORK.

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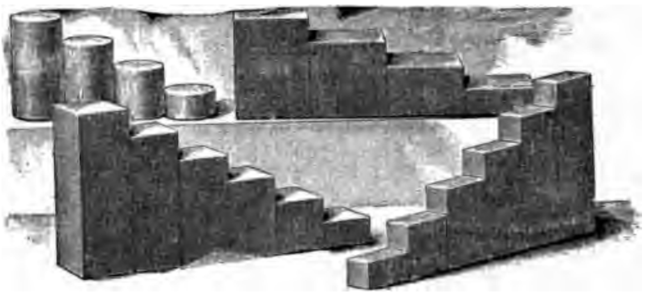
1. Indefinite relations of magnitude:

Terms: Larger, smaller, largest, smallest; longer, shorter, longest, shortest; taller, shorter, tallest, shortest; Higher, lower, highest, lowest; heavier, lighter, heaviest, lightest; more, less, etc.

2. Definite relations of magnitude:

a. Ratio 1, equality.
b. Ratio 2, $\frac{1}{2}$.
c. Ratio 3, $\frac{1}{3}$, $\frac{2}{3}$, $\frac{3}{2}$.
d. Ratio 4, $\frac{1}{4}$, $\frac{3}{4}$, $\frac{4}{3}$.



Suggestions:

In teaching the ratio 1, use these terms:

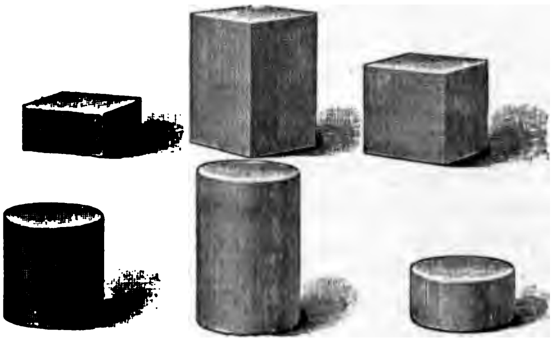
1, 2, $\frac{1}{2}$, 3, $\frac{1}{3}$, $\frac{2}{3}$, 4, $\frac{1}{4}$, $\frac{3}{4}$, 5, 6,
1, 2, $\frac{1}{2}$, 3, $\frac{1}{3}$, $\frac{2}{3}$, 4, $\frac{1}{4}$, $\frac{3}{4}$, 5, 6, etc.

In teaching the ratios 2 and $\frac{1}{2}$, use the terms,

1, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30,
$\frac{1}{2}$, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15.

In teaching the ratios 3, $\frac{1}{3}$, $\frac{2}{3}$, , train pupils to associate the following names with the magnitudes, or units, having these ratios:

m, a, $\frac{3}{2}$, 1, 3, 6, 9, 12,
c, b, 1, $\frac{2}{3}$, 2, 4, 6, 8,
d, c, $\frac{1}{2}$, $\frac{1}{3}$, 1, 2, 3, 4.



In teaching the ratios 4, $\frac{1}{4}$, $\frac{3}{4}$, $\frac{4}{3}$, name the units:

d, a, 1, $\frac{4}{3}$, 3, 4, 8, 12,
c, b, $\frac{3}{4}$, 1, $\frac{3}{2}$, 3, 6, 9,
b, c, $\frac{1}{2}$, $\frac{2}{3}$, 1, 2, 4, 6,
a, d, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2}$, 1, 2, 3,

In developing the idea of the ratio 1, or equality, express the equations in the following terms:

$$\begin{array}{cccccc} a & 3 & 1 & 2 & 2 & 1 \\ & 2 & 1 & 2 & 1 & 3 \\ \hline & 5 & 2 & 4 & 3 & 4 \end{array} \qquad \begin{array}{cccccc} b & 4 & 2 & 1 & 5 & 3 \\ & 3 & 4 & 4 & 2 & 3 \\ \hline & 7 & 6 & 2 & 7 & 6 \end{array}$$

$$\begin{array}{cccccc} c & 4 & 3 & 3 & 2 & 2 \\ & 4 & 4 & 5 & 5 & 6 \\ \hline & 8 & 7 & 8 & 7 & 8 \end{array} \qquad \begin{array}{cccccc} d & 4 & 1 & 2 & 8 & 6 \\ & 5 & 7 & 7 & 1 & 3 \\ \hline & 9 & 8 & 9 & 9 & 9 \end{array}$$

Suggestion—Method of Work.

These units are 14 and 28. Find other units that may be called 14 and 28.

Select by the sense of touch units having the ratio 2 and ½.

Cut units having the ratios of 14 and 28.

Draw units having the ratios of 14 and 28.

Find units twice as large as a unit shown by teacher or pupil; one-half as large.

2 is the ratio of 28 to 14. Find solids whose ratio is 2.

½ is the ratio of 28 to 14. Find units whose ratio is ½.

Questions:

1. 28 is how many times as large as 14?
2. What part of 28 is as large as 14?
3. 28 is how much larger than 14?
4. 14 is how much less than 28?
5. What unit is twice as large as 14?
6. What unit is one-half as large as 28?
7. 2 is the ratio of what to 14?
8. ½ is the ratio of what to 28?
9. What is the ratio of one-half of 28 to 14?
10. What is the ratio of ½ of 28 to ½ of 14?
11. ½ of 28 equals what?
12. 14 and 14 equals what?
13. 2' 14 equal what?
14. 14 and what equal 28?
15. 14 equal 2' 7's. 28 equals how many 7's?
16. What is the ratio of 2' 14's to 2' 28's?
17. What is the ratio of 2' 14's to 28?
18. If 28 is the name of a unit what is the name of a unit ½ as large?
19. 28 and 14 equal how many 14's?
20. What is the ratio of 28 pints to 14 pints? of 28 pints to 7 pints?
21. 14 days equal two weeks. 28 days equal how many weeks?
22. If 14 sheets of paper are worth 13 cents what are 28 sheets worth?
23. If the unit 14 weighs 11 ounces what is weight of the unit 28?
24. If ½ of 28 is worth 24 cents what is ½ of 14 worth?
25. If a toy wagon cost 14 cents what is the cost of two toy wagons?

Underlying Principles.

By SETH T. STEWART. Associate Superintendent of Schools, Boroughs of Manhattan and the Bronx, City of New York.

EDUCATION may be defined as the development or production in each pupil of so much of a subjective world of thought, feeling, and action, as shall be adequate for his career in life.

The brain or sensorium is the subjective sphere just as the earth is the objective sphere. By a slow process of evolution on the earth, there has been developed an objective world, and in the sensorium, similarly, there is developed a subjective world ; the latter corresponds to the former,—area for area, interest for interest. By properly relating the objective areas to the subjective areas, that is by the method of the teacher, the latter areas becomes responsive to the others; they are in sympathy with them; interests are thus developed. Finally by education the one area becomes the mental reproduction of the other. Any element in any objective area of interest may then sympathetically call into consciousness all the concepts of the corresponding subjective area; a single leaf may, thus, call into the consciousness of an educated person the concepts of the entire flora of a country, the scale of a fish, the fauna.

The brain or the sensorium is the pupil's table or subjective sphere upon which impressions of the objective world, area for area are recorded and the body is his agent of expression. The pupil is the being who possesses both body and brain and who under the leadership of a teacher, properly relating the objective to the subjective and the expression to the impression, is capable of organizing for himself a subjective world, the counterpart of the objective. Each element in the latter will then awaken the proper interest or feeling in the former, and challenge and secure the appropriate thought and action of the pupil, that is the proper reaction.

The objective world is sometimes divided into the qualitative and the quantitative. Everything, even thought itself is considered, first, with respect to its qualitative relations and then with respect te its quantitative relations.

All thoughts may be classified under the following categories: 1. Being, and 2 Relation,—with special reference to the natural and social sciences; 3. Cause, and 4. Causality,—with special reference to the inductive sciences; and, 5. Time, and, 6. Space, —with special reference to the deductive sciences.

While Geometry is the organization of space concepts; Arithmetic and Algebra are the organization of time concepts,—repetition of a unit, etc. The objective world with respect to its time and space concepts, may not be as obvious to the senses as it is with respect to the four other categories of thought. The natural or material and the social sciences, the physical and even the metaphysical, *i. e.*, inductive sciences, may appeal more strongly to the attention or more readily awaken interest in the mind of the pupil than the mathematical sciences.

The areas of mathematical interest, both objective and subjective, are, however, just as definite and distinct as the areas of interest in any of the inductive or other sciences. The essential forms of mathematical thought are better known by far than the thought forms in any of the other sciences. The essential thought-forms of arithmetic are, moreover, the most familiar thought-forms in the entire realm of science.

The course of study in arithmetic now used in the public schools of the Boroughs of Manhattan and The Bronx is prepared with special respect to the following principles:

1. Arithmetical areas of interest, objective and subjective.
2. Distinct impression of arithmetical forms of thought.
3. Skillful expression of arithmetical forms of thought.

The entire objective arithmetical area is constantly kept in view. The entire subjective arithmetical area in the mind of the pupil is constantly being cultivated. He who desires to see a chart of the subjective arithmetical area in the mind of any pupil at the beginning of a school term, may look at the course of study in arithmetic for the grade next lower than that which the child is about to begin. The course of study for this lower grade is the chart of the child's mind at the beginning of the new term as far as arithmetic is concerned.

The entire arithmetic, in posse, is the course of study for the 1 A grade (first year, first half); the entire arithmetic, in esse, is the course of study for the 7 B grade (seventh year, second half). In the lowest grade, every portion (sub-area) of the entire area of arithmetical thought is placed under cultivation, and it is thereafter kept under cultivation throughout the course of instruction.

Each form of arithmetical thought has its area of interest to be cultivated. The simplest forms for addition, subtraction, multiplication, division, are started in rather rapid succession in the lowest grade and late in the same grade the fractional form is started. Denominate units, oral and written work are all introduced in the first lessons in number and the work is correlated with the study of the simplest forms of nature.

CORRELATION.

Studies are all qualitative first and then quantitative and so, arithmetic may be and should be every where correlated with other studies.

The study of the butterfly may be the occasion for the formal beginning of the study of arithmetic. Its wings will appeal to the small child as four in number, two on each side:

$$\begin{array}{c}2\\2\\\hline 4\end{array}$$

Here are two and two, or two two's. The child is launched on the science of arithmetic. The clover leaf may have four lobes and give

$$\begin{array}{c}1\\1\\1\\1\\\hline 4\end{array}$$

The four wings of the bee as pictured in a book or in outline on the blackboard by the teacher furnish another study in number. All the domestic animals are similarly subjects for number studies. The clover leaf may give us only three lobes:

$$\begin{array}{c}1\\1\\1\\\hline 3\end{array}$$

The feelers of the moth or butterfly may give us only

$$\begin{array}{c}1\\1\\\hline 2\end{array}$$

The maple leaf and the rose furnish occasion for a study of five.

All lilies and all insects give us lessons on six; spiders on eight, crabs and lobsters on ten; etc.

The most familiar forms of the animal, plant, and mineral kingdoms afford an interesting introduction to the science of arithmetic.

When objects fail, the outline drawings of the teacher remain one of the means of suggestion to the pupils; thus, the teacher makes outline drawings of pears, or apples, or other familiar objects on the blackboard in groups with signs between the groups. The addition of two pears and one pear, are thus suggested;

$$\text{z z} + \text{z} = \text{z z z}$$

$$2 + 1 = 3$$

under each group of outline drawings the appropriate figure being placed.

Here an impression is produced first with forms of nature; then represented by pictorial outlines; and then by the abbreviated *story form* for blackboard use only, viz:

$$2 + 1 = 3$$

(two and one are three).

This is the shorthand representation of the story by the teacher or occasionally by the pupil on the blackboard.

The practical form only is presented for copy by pupil at his desk and occasionally at the blackboard.

$$\begin{array}{c} 2 \\ 1 \\ \hline 3 \end{array}$$

This simple practical written form is the only one used by the pupil for addition, subtraction and multiplication. The child is given a problem (not a bare example) which it writes in the practical form and with respect to which it uses its judgment as to whether the work is addition, subtraction, or multiplication on the one hand, or division on the other; thus,

$$\begin{array}{c} 3 \\ 2 \\ \hline \end{array}$$

may lead to

$$\begin{array}{ccccc} 3 & & 3 & & 3 \\ 2 & & 2 & & 2 \\ \cline{1-1}\cline{3-3}\cline{5-5} 1 & & 5 & & 6 \end{array}$$

or, the child may have

$$\begin{array}{r} 3)\ 6 \\ \hline 2 \end{array}$$

How many three's in six.

METHODS.

The Grube method is not suggested by the course of study. Its exhaustive treatment of numbers is appropriate for a German philosopher but unreasonable for a small child. In the first course to 10, beginning with the number 3 or 4, a few of the easiest possible combinations in numbers in succession are presented, the difficult combinations and the special study of 0 and 1 being reserved for a second or third course over these same numbers.

The first course of lessons in the lowest grade may include the following series or merely selections from the series:

1. Addition and subtraction to 3 (2 + 1 and 1 + 2 and 3—1 and 3 — 2)
2. Addition, subtraction, multiplication and division to 4 (3 + 1 and 2 + 2 and 1 + 3 and 4 —1 and 4 — 2 and 4 — 3 and two 2's and how many 2's in 4)?
3. Addition and subtraction to 5 (4 + 1 and 3 + 2 and 2 + 3 and 1 + 4 and 5 — 1; 5 — 2; 5 — 3; 5 — 4).

4. Addition, subtraction, multiplication and division to 6

Multiplication and Division:

$$\begin{array}{r} 3\\ 2\\ \hline 6 \end{array}\qquad \begin{array}{r} 2\\ 3\\ \hline 6 \end{array}$$

$$\begin{array}{r} 3)\ 6\\ \hline 2 \end{array}\qquad \begin{array}{r} 2)\ 6\\ \hline 3 \end{array}$$

5. In the lowest grade these processes are thus continued t

Multiplication and Division:

$$\begin{array}{r} 5\\ 2\\ \hline 10 \end{array}\qquad \begin{array}{r} 2\\ 5\\ \hline 10 \end{array}$$

$$\begin{array}{r} 5)\ 10\\ \hline 2 \end{array}\qquad \begin{array}{r} 2)\ 10\\ \hline 5 \end{array}$$

After 10 has been reached by these easy stages, the same groun is covered with special reference to 1 and 0 ; thus

$$\begin{array}{r} 3\\ 3\\ \hline 0 \end{array}\qquad \begin{array}{r} 3\\ 1\\ \hline 3 \end{array}\qquad \begin{array}{r} 3)\ 3\\ \hline 1 \end{array}$$

The sign + need not be used until towards the end of the secon or third course to 10; and, then only on the black-board and by th teacher. The teacher has frequently given the pupil problems at the black-board and on their papers on their desks, involving th number of groups of five in ten, always expressed thus :

$$\begin{array}{r} 5)10\\ \hline 2 \end{array}$$

(the groups of five in ten are two.) The teacher may then place on the black-board her story or shorthand form :

$$10 + 5 - 2$$

(ten separated into five's gives two). The pupil need not use this form. The form suggests that the teacher thinking of ten, she wishes the pupils to find the number of five's in it according to their practical form, the only one used by them

$$\begin{array}{r} 5)10\\ \hline 2 \end{array}$$

All drill work is in the practical form. The signs are never written with the practical form, thus

$$\begin{array}{r} 3\\ \times 1\\ \hline 3 \end{array}$$

The fraction is found by the division of an apple into two equal parts, one of which is represented by

$$\frac{1}{2}$$

By reference to objects and by constant use of the same simple forms, distinct impressions are produced in each of the subjective areas of arithmetical thought in even the lowest or 1 A grade.

The Grube method is not suggested to any, the least degree beyond ten but rather the method of decades. By oral and written problems rather than examples the interest is maintained and unconscious but constant repetition secured.

SKILL IN EXPRESSION.

The beginning of all forms of arithmetical work are planted in their respective subjective areas in the 1A grade. These areas are kept under constant cultivation for seven years, until an entire and complete arithmetic is subjectively developed.

Skillful work is secured by a system of limits. Nothing is so successful as success, and the habit of success is cultivated by setting limits within which all the operations of the grade must be confined. In written work, the limits advance one place or order for each grade until one hundred thousand is reached in the 3 B grade (third year, second half). The limit for notation and numeration is one grade in advance of the other work in each grade. The limits for oral arithmetic are successively 10, 20, 40, 50, 75, 100 and 150, the last being the limit for the 4 A grade.

PRACTICAL FORMS.

Beginning with the lowest grade, only practical forms are taught. Speculative and unusual subdivisions of arithmetic are omitted. The forms of mercantile and industrial arithmetic are always emphasized as the necessary development of the primary forms. The course is adapted to develop familiarity and skill with industrial and mercantile arithmetic.

THE PRINTED COURSE, A CHART.

The course of study for each grade is the new chart for the grade of the subjective arithmetical area of interest. The work in this chart that is in advance of the work in the next lower chart should be underscored to indicate that it requires the most attention in its respective area of interest.

The advance work of the next lower grade should be underscored in some other way to indicate that it should receive the next highest degree of attention. All the rest of the course of study for the grade should receive constant attention, but not so much as the portions to which reference is thus made.

The course of study for a grade thus properly printed or underscored, in three styles of type, would represent the field of the arithmetical consciousness of the class. The most emphatic type would present the matter requiring the highest efforts of apperception, and the other type would represent the apperceptive basis of the work of the teacher in the subject of arithmetic.

Industrial Applications In The Grammar Grades

By Joseph H. Wade, Principal Public School 23, New York City.

RUNNING through the entire course in arithmetic is a divisi of the work which aims directly at objective illustration a inductive methods of teaching. This division of the cour entitled the Industrial Applications, demands a continual exerc of the pupils' observations and judgments on matters of actual a estimated measurements. This in itself is an invaluable trainin much more so than the mere conning of tables of weights ar measures, and it requires a constant application of the maxim *th* in the education of the child the methods employed are often more important consideration than the facts to be imparted.

No one will deny the interest excited by this feature of t work, especially in the lower grades. Here we find a practic illustration of the maxim of the great educator, "to learn by doing," and the actual measurements of lengths, surfaces and capacities the comparisons of real denominate units and the solving of problems concerning real magnitudes will impress on the pupils' mind as nothing else could impress the dimensions of and the relation existing between these different magnitudes. To commit to memory the tables with no actual demonstrations is of little educational valu to the child. Acquired in this way the units are but words and remain as such, until in after years, in the practical school of life, the adult begins to understand, if his lifework deals with such facts, what the child might have learned with pleasure and interest in school. And to a great extent these facts and judgments of measurement are utilized in the pupils' after lives long after much of the school arithmetic shall have fallen into *innocuous desuetude.*

The denominate units and their relations learned objectively by actual measurements and the verifying of judgments are living realities to the child and the interest awakened during lessons and recitations in this division of the work aids their acquirement with rapidity and precision.

The value of this work has always been appreciated, but until the introduction of the present course it was not systematically carried out. This is owing to the fact, that now, instead of the pupil learning in a low grade all the tables, carrying them for several terms as memory gems, to be learned again and applied in the old fourth grammar grade, the work has been mapped out in definite and progressive form with constant application, so that thorough assimilation is possible.

In this paper I shall deal directly with the work of each grade in turn and show what is being accomplished by teachers who are handling the subject every day in their classrooms.

In the 4 A Grade the industrial applications call for "actual measurements as far as practicable by denominate units of the grade." Naturally, the first step would be to explain the term denominate units as a standard of measurement and to show the necessity for such standard. Then, as each table is taken up, the teacher should develop facts concerning the different measures. This knowledge on the part of the pupils is often falsely assumed, and the result is a cloudiness which affects all the subsequent work in the subject. When possible the different units should be shown and handled by the pupils, as the dollar and its divisions, and the yard, pound, gallon, etc. With the bushel, the dimensions 12 x 12 x 15 inches will permit the construction of a paper box accurate enough for demonstration and certainly affording a better idea of the capacity of the unit than the so-called bushel in ordinary use.

The name Federal money having been explained, practice in its units can be given by the purchase of articles in the classroom, and if desirable substitutes for real money may be manufactured from pieces of cardboard and practical examples given in making change, one of the scholars acting as storekeeper. In applying long measure the pupils can measure books, desks, window sills, widths of doors, the sides of the room, and exercise their judgments in the estimation of lines drawn on blackboard and the lengths and widths of objects in the room. Constant practice in the accurate use of the rule is given by the working drawings and the drawings for the construction work required in the grade. As the units of liquid measure are obtainable from the supply department, a clean and suitable substitute for the liquid is found in the white sand commonly used for the sprinkling of the floors of stores and basements. A mere mention to the class of the teacher's desire to possess a supply of the sand is only necessary, and if a supply is kept on hand in the gallon measure the relations existing between gill and pint and pint and quart, etc., can be clearly demonstrated.

In Grade 4 B the course reads, "Actual measurements, as far as practicable, by denominate units of the grade. Simple problems." As the denominations in this grade are the same as in 4 A the work is quite similar, the problems alone requiring a higher mental application. In long measure the pupils can measure the floor, learn the length of a mile by comparison with familiar distances, as the twenty blocks along the avenue, or downtown, the distance from the City Hall to Rivington street, where the old mile-stone yet remains. Some of the problems given by teachers in this grade are:

"What will it cost to fence a lot 75 x 100 ft., at $.40 a foot?"

"Chestnuts cost $.09 a quart; how much will a bushel cost How many bushels can be bought for $25.?"

"It is 150 miles from here to Albany; how long will it take t travel there at the rate of 30 miles an hour?"

Estimation of lengths in the room verified by actual measurements. The teacher must bear in mind that concrete illustration i necessary, that the relations of these units should be developed b actual demonstration and not by hearsay and lip service, as in th old learning of the tables by rote. The daily experience of th pupils in purchasing at the grocery store should be utilized in th classroom work.

In Grade 5 A the course is:

1. "Actual measurements by denominate units. Comparati judgments."

2. "Measurement of commensurate surfaces and boxes b application of square (sq. in.) and solid units (cu. in.)"

In this grade the square inch, foot and yard are introduce From the oak tag paper inch squares can be made and the surfac of pads, books and desks measured, the square foot measured on desks and the square yard divided into square feet on the blac board. One such concrete lesson will serve to teach the fact th 144 square inches make 1 square foot, and 9 square feet 1 squ yard. The comparative judgments of the pupil serve a twof purpose in the training of the sense perceptions and in the practi obtained in rapid mental calculations, the accuracy of such calcul tions being verified afterwards by actual measurement and cor parison. In this grade it will be found useful to make cubic inc boxes of oak tag paper and filling the gill, pint, quart and gall measures with sand by means of these boxes will teach cub capacity. The teacher here should guard against the very commo error of pupils that square inch and inch square, square feet an foot square are the same. This can be shown by cutting surface of 6 x 24 inches or 1 x 9 feet and measuring the surfaces by actuall laying on the square inch or square foot in oak tag paper. By suc cutting and comparison the important fact is impressed that the basi of measurement, whether of surface or capacity, is the linear uni and that the mechanic and tradesman constantly depends on hi rule or tape measure.

In the 5 B Grade the course is:

"1. Estimated measurements.

2. Problems involving denominate units.

The new denominations introduced are rods, barrels, hogshead and hundred weights. As these are obviously beyond the pale direct objective illustration, the teacher must use ingenuity a invention to develop their conceptions. The relations between these and other denominations previously acquired should be pointed out and likewise their uses in the trades and industries. Most pupils have seen barrels and hogsheads unloaded from the trucks of wholesale warehouses. The teacher should explain that these terms, barrel of 31½ gallons and hogshead of 63 gallons, are used in denoting the capacities of tanks, vats and cisterns, and that the vessels which ordinarily bear these names are not of necessity measures of definite amounts of liquids. This will explain the seeming inconsistencies in the sizes of these vessels.

Children have noticed how nicely the grocer estimates the pound of butter, or half pound of cheese, or pint of milk, and how the butcher avoids waste in his estimation of a pound or several pounds in a cut of meat. These interesting facts serve to impress them with the necessity of careful estimations.

The teacher may explain the term rod as derived from the old measuring stick, or rod and its length can be marked off on the floor or side of the room.

In this grade simple problems concerning the cost of flooring, carpeting and plastering, involving mixed numbers and fractions, should be given. Care should be taken to avoid long or complicated examples.

In the 6 A Grade the work is :

1. Estimated measurements.
2. Problems involving denominate units.
3. Area of rectangle; cost of carpets, etc.
4. Area of right triangle.
5. Contents of rectangular boxes in cubic inches and cubic feet."

In this grade circular measure is introduced, and its use as a measure of angles and directions and indirectly of latitude, longitude and difference of time, should be explained. Circles of different sizes may be drawn, explained as plane figures and the fact pointed out that difference in size does not affect the number or relations of the seconds, minutes and degrees. This may seem unnecessary to those who have not experienced the mistakes such explanation may prevent. Though the area of a rectangle is mentioned here for the first time, the pupils have already had some experience in surface measuring in the lower grades.

The estimated measures should now take in large surfaces, as the number of square yards in the floor of the classroom, or the surface of the blackboard, and the division of rectangular areas into square inches or square feet should be resorted to when there is any doubt as to a clear understanding. From the areas of rectangles the pupils can be shown the reason for multiplying the base by half the altitude to obtain the area of right triangles. The triangle being drawn, the rectangle can be completed of the same altitude and base and the method proved concretely. The small paper cube will be found very useful in teaching how to determine the capacit of rectangular boxes and the class can always have on hand a number sufficient to demonstrate the number of cubic inches in smal cubic magnitudes.

In Grade 6 B the course is :

"1. Area of rectangle.
2. Area of triangle, base and altitude.
3. Capacity of rooms, tanks, etc."

The new denominations are square rod, acre, square mile an cubic inch, foot and yard. The problems in roofing, paving, floo ing, papering, etc., in this grade are only extended applications o what the pupils have already learned objectively in the lowe grades. The method to find the area of a triangle should be taugh inductively. The teacher can take up first the isosceles triangl complete the rectangle of the same base and altitude and show th relationship.

In teaching capacity the teacher can begin with cubes and rec angular boxes. He can place a row of inch cubes say on a base 4 x 4, and show objectively that there are 16 cubic inches in th layer, and then placing another layer and so on induce the rule f determining capacity. A paper box, 6 x 6 x 6½ inches will b accurate enough for the purpose of demonstrating the cubic capacit of the gallon and can be filled with white sand from the gallo measure. All the problems in this grade should be of a practic nature and as far as possible deal with matters familiar to th pupils.

In the 7 A Grade English money is introduced and the righ triangle (squares of sides) and the circle, with its radius, diamete circumference and area are taken up.

The dimensions given should be such as allow of perfect square and their roots, the purpose being to demonstrate the method an not to solve difficult combinations. The teacher can objectivel derive the formula for determining the area of the circle by dividin it into a number of triangles, with bases in the circumference an apices at the center. Then, regarding the circle as composed of a indefinite number of such triangles, with bases so small that the sum equals the circumference and their altitudes the radii of th circle, he develops from their knowledge of the area of triangl that the circle as the sum of all these triangles equals the circun ference multiplied by one-half the radius. It might be well t briefly explain the relationship which π represents before givir the formula, that the area of a circle equals cir. x $\frac{1}{2}$ r, which agai equals $2\pi r \times \frac{1}{2} r$, or πr^2 or $r^2 \times 3.1416$. This is certainly prefe able to a mere memorizing of the formula and makes the solving problems concerning radius, diameter and circumference unde standable by the class. The teacher can also illustrate that th circumference is 3.1416 times the diameter by cutting an ordinary tin hoop and stretching it out in a straight line. The dimensions of the sides of the right triangle should be so chosen as to admit of simple evolutions, thus avoiding complicated calculations.

The amount of objective illustration even in this high grade is as extensive as a skilful teacher wishes to make it.

In the 7 B Grade the metric system is introduced, and the relationship to the dimensions already learned should be made clear. If this is done, an understanding of the system is easily acquired by the pupils. The industrial work includes measurements of rectangles, triangles, parallelograms, triangles, circles, capacity, cubes and prisms.

In conclusion, I would revert to the fact that whenever possible the work should be objective. In this way only can the class obtain a definite idea of the value and derivation of the formulæ and the teacher hope for successful results and an abiding knowledge of the subject.

Oral Arithmetic.

By A. Sabin, Assistant Superintendent of Schools, Chicago, Ill.

ORAL Arithmetic teaches the facts and processes of Arithmetic intuitively. If it does not, it ought to. It is its one mission. It should do for arithmetic what the home does for language. It should prepare the way for the symbol; and thus its place is indicated. A bundle of ferns, as ferns, is intuitive. A bundle of ferns, as green feathers, is symbolical. Until the fern itself is known intuitively, feather is as good as fern.

Oral Arithmetic, because oral, is in no wise dependent upon symbols. It does not teach processes into which symbols enter. The symbols of the multiplication table are merely a short hand convenience in tabulating. The facts are intuitive whether tabulated or not. Oral Arithmetic does not cipher, nor does it solve problems by counting marks for its processes of addition, subtraction, etc. It is not dependent upon symbols for the classification and arrangement of what it teaches.

Symbolical Arithmetic has a notation for integers, another for common fractions, a third for decimals, a fourth for percentage, and a fifth for denominate numbers. The text book consists largely of problems in the solution of which the pupil acquires facility in manipulating five sets of symbols. A year or more is commonly devoted to each class of problems. A third grade pupil intuitively knows that six quarts equal three-fourths of a gallon. In Oral Arithmetic he need not wait for the kindred intuition; that six quarts equal seventy-five hundredths or seventy-five per cent. of a gallon.

ORAL ARITHMETIC BY GRADES.

FIRST GRADE.

Counting. This is a fundamental process. Shall we place on our number tables common counters or blocks cut to exact measurement? Why place either? The answer is to help pupils to an intuitive knowledge of number, number relations, and number symbols. Are common counters adequate? Let us see. Here are some grains of corn. Each kernel is an individual kernel. If individual, then different, since individuality requires that no two things be alike. They are different for they can be given, one each, to as many different pupils, as there are kernels. But if different they differ. If they differ, they are unlike. It follows that no one kernel can be measuring unit of the other kernels. What can we do with them? We used to count them or think we did. We placed them in a row, and, the teacher pointing, the pupil was made to say, one, two, three, four, five. And when the supervisor interposed with "show me five" the pupil would obediently place the index finger on the kernel last named; for the words used were, to the pupil, name words and might as well have been May, Jane, Sue, etc. The words used were not true in terms of sense perception and should have been one, one, one, one, one. The five kernels, when seen, must be seen as an aggregation of one or of individual kernels. The counting relates each grain as a part, to a group of individual grains, as a whole. The rockers and legs of a chair are related to the chair as a whole, but a rocker is in no wise related to a leg.

Now an inch is an inch everywhere and always. An inch is universal. It is not limited to the here and now. Inches do not vary or differ. An inch has no individuality. A string five inches long is not an aggregation of five strings each an inch long. It is not an aggregation at all. It is one single individual whole. It is five inches long by virtue of being five times the length of a measuring unit one inch. As a string, it is one. In its relation to other strings of varying lengths it is five units relation to the measuring unit, it is five. As a measuring unit, it is one. When the symbol period is reached it is both 1 and 5.

Let blocks cut from hard maple, well seasoned, be placed upon the number table as follows:

One inch and two inch cubes—A dozen each.

Inch prisms, two to six inches in length,—four each.

Inch prisms, seven to twelve inches in length,—two each.

Two inch prisms, three to six inches in length,—two each.

Spheres, cones, cylinders, to be borrowed from the drawing department.

With the blocks in the hands of the pupils the teacher will do well to lead them to observe and discover.

1st. Inequalities.

2nd. Equalities.

3rd. Definite relations.

In discovering *inequalities*, note differences in shape, form, size, length, width, surface, etc. Help the pupil to suitable language to tell what he discovers.

In discovering *equalities*.

1st. With a block in hand find its equal.

2nd. Given a magnitude, find its equal in two or more magnitudes of lesser dimensions.

3rd. Given a two inch prism find its equal in inch prisms. Let it be observed that in building equations with blocks the facts of addition and subtraction are brought under sense perception further on.

With the quest for *definite relations*, actual and accurate measuring begins. As the pupil measures he counts. Counting accompanies actual measurement and records its results. Measuring is not counting, nor is counting measuring. Measuring is manual; counting is mental.

In terms of sense perception each block of the number table is one block. By actual measurement sense perception makes intuitive the two times or one-half, three times or one-third, four times or one-fourth, etc.

COUNTING AND ADDITION.

If one must needs know the number of potatoes in a hill, he first digs and then counts them. Having thus learned that there are eight potatoes in one hill, and seven in another, if he knows that eight and seven equal fifteen, he knows he has fifteen potatoes. If he does not know eight and seven are fifteen, he must count seven of his potatoes a second time, calling the first one nine. The writer believes that many pupils pass through the schools without ever learning to add. Bad teaching is responsible if the charge be true. A child does not know five and four as nine. He is set a problem in the solution of which he must find out. He is shown how to draw five lines and four lines and told to count them. He finds out. He is happy. He loves to make marks and count them. The teacher thinks it good busy work. It keeps the child occupied. Other problems follow—a multitude. Subtraction, multiplication, and division figure in them. Lines are drawn and counted or rubbed out for subtraction, or grouped off for multiplication and division. The child has learned one process—counting. He has followed a false guide. Let the child who is an expert at building equations with blocks be set the problem involving the five and four and he will at once place a prism five inches long and a prism four inches long by the side of a prism nine inches long. He knows intuitively 5 and 4 as 9. All the facts of addition and subtraction reside intuitively in the blocks of the number table.

SECOND YEAR.

The old time books of Mental Arithmetic with a pedagogical unanimity had followed the dictum of Warren Colburn, "First find the price of one." This uniform recognition of one as the only unit to be reasoned from, narrow the scope of Oral Arithmetic unreasonably. It involved some hardships. It did not meet the demands of the fruit stand and the department stores on bargin Mondays. A little girl has learned her multiplication table in twos and threes. She finds she can buy two apples for three cents but she must wait for her apples till she has ciphered thro' common fractions to find the price of one. The price of oranges is three for ten cents, but it is against the rules for a school boy to reckon the price of a dozen till he has reached the Rule of Three in the seventh grade. No wonder boys got out of school to become boot-blacks.

In addition to what Warren Colburn taught, Oral Arithmetic must make intuitive:

1st. That any number may be used as the unit of price or quantity and as such is one.

2nd. That every number value has a definite relation to every other number value and that the symbol (or symbols) expressing such relation is the ratio of the related values.

3rd. The decimal equivalent of all fractional values.

Beginning second grade, pupils should be ready for number symbols. They may be presented something as follows:

1.	As representing an inch cube.	a pint.	a prism 3-in. long	five minutes by the clock.
2.	a prism twice the length of the cube of 1.	2 pts. or a quart.	a prism 6-in. long twice the length of 1.	2 five minutes 10 minutes.
3.	a prism 3-in. long, etc.	a 3 qt. bowl.	a prism of 9-in.	3 five minutes or 15 minutes.

Simple problems involving the addition of two numbers may be entered upon as soon as the pupil can read the problem. The blocks should make intuitive the adding till all the facts of addition are well fixed in memory. The teacher should see to it that the child adds rather than counts. Columns of symbols for addition must be withheld till the child knows 3 and 2 as 5, 3 and 5 as 8, 4 and 6 as 10, etc. Time is no importance here. It is now or never with the child. If he counts thro' the second year, he will be counting in his fourth year. The facts of addition and multiplication must be a possession before the fourth year, if we are ever to be sure of them.

The facts of multiplication are made intuitive by means of related rectangles placed upon the board or cut from card board for seat work. With these facts acquired, our little girl is ready for the fruit stand problem.

If 2 apples cost 3 cents what should be the cost of 4, 6, 8, 10 apples.

4 apples are two 2 apples and will cost two 3 cents or 6 cents. 6 apples are three 2 apples and will cost three 3 cents or 9 cents, etc.

If 5 plums cost 2 cents, how many plums will 10 cents buy?

10 cents are five 2 cents and will buy five 5 plums or 25 plums; and so our little girl finds her facts of some practical use.

See "Oral Arithmetic by Grades" Book 1 pp. 33-35.

THIRD GRADE.

Facts of addition and multiplication completed.

Example: 1. If 27 yards of silk cost $30.00, what is the cost of 45 yards?

The pupil is expected to observe that 27 and 45 are facts in the table of 9's; that 27 equals 3 9's, and 45, five 9's; that the relation of 45 to 27 is the relation of 5 to 3 or $\frac{5}{3}$. He is now ready to recite: 45 is $\frac{5}{3}$ of 27, and the cost of 45 yards is $\frac{5}{3}$ of $30.00 or $50.00.

Example 2: What is the relation of 40 to 88?

The relation of 40 to 88 is the relation of 5 8's to 11 8's or 5/11.

Example 3: At 15 cents for 9 apples, find cost of 3 apples; 6 apples; 24 apples.

Pupil recites: 3 apples are $\frac{1}{3}$ of 9 apples and will cost $\frac{1}{3}$ of 15 cents or 5 cents; 6 apples cost twice the cost of 3 apples or 10 cents; 24 apples cost four times the cost of 6 apples or 40 cents. In none of these problems does the pupil reason from one as the unit either of price or quantity. He reasons from the price and quantity given in the problem by means of his knowledge of number relations. Nor would we have the pupil reason from one, even when he may, just as well.

Example 4: If 7 dozen pencils cost 84 cents, what is the cost of 8 dozen of the same pencils? The pupil knowing his facts observes at a glance that 84 cents are seven 12 cents, and that the cost of 8 dozen is eight 12 cents and so recites: The cost of 8 dozen pencils is eight 12 cents, or 96 cents. Reasoning back to 1 introduces another problem in no wise involved in the problem as stated. From his knowledge of the Table the pupil is just as ready to reason from 7 to 8 as he ever can be to reason from 7 to 1 and from 1 to 8.

Again, in teaching pupils to read fractional values at sight, time is saved by eliminating the reasoning to and from 1.

Example 5: What is $\frac{3}{4}$ of 32? The pupil observing that four 8's are 32, reads at once three 8's or 24 = $\frac{3}{4}$ of 32.

DENOMINATE NUMBERS.

The facts and relation of values afforded by the Tables of weights and measures are rich in resources for Oral Arithmetic, but need no suggestion here, further than that the school should afford ready facilities for actual weighing and measuring. When the school has reached the limit of its possibilities in this direction it has reached the limit of utility in this department of Oral Arithmetic.

FOURTH GRADE.

The work of the fourth grade should familiarize the pupils with fractional values.

Example 1: What is the cost of 4 tons of coal, if $\frac{3}{4}$ of a ton is worth $6.00?

Here the pupil should know how to find the price of a ton whether he uses the form of analysis or not. Children who have used the blocks in the first grade know intuitively that a prism 3 inches long is $\frac{3}{4}$ of a prism that is four inches long and that the reciprocal relation is $\frac{4}{3}$. To a pupil thus taught, the fractional value

¾ will suggest two prisms thus related. He therefore recites: the price of a ton of coal is 4/3 of $6.00 or $8.00. But in the problem as stated he is far likelier to relate the 4 tons to the fractional value direct. His reasoning is this: that the relation of a ton to ¾ ton is 4/3 and the relation of 4 tons is 16/3. He therefore recites:

The cost of 4 tons is 16/3 of $6.00 or $32.

Example 2: How many acres in 1/6 of a field, if there are 9 acres in ¼ of it?

By diagram the pupil must be helped to see that the relation of 1/6 to 1/4 is in the relation of 2/10 to 3/12 of ⅔. He then recites that 1/6 of the field contains ⅔ of 9 acres or 6 acres.

Example 3: If 1/6 of an acre of land is worth $8.00, what is the cost of 7/8 acre?

a { 1/6 acre worth $8.00.
An acre is worth $48.00.
⅞ acre is worth 7 $6.00 or $42.00.

b { The relation of ⅞ to 1/6 is the relation of 21/24 to 4/24
or 21/4; 21/4 of $8.00=$40.00

Fifth Grade.

Pupils should be able to think the decimal equivalent of halves, thirds, fourths, fifths, sixths, eights, tenths, twelfths, and sixteenths as readily as they think the facts of the multiplication tables. This work belongs to *fifth grade.*

Example 1. The cost of .37½ of a quantity is $.75. What is the cost of ⅓ of the quantity?

The ratio of ⅓ to .37½ or ⅜ is ⅓ of $.75=$.25.

Example II. The cost of .16⅔ of a quantity is $.62½. What is the cost of 4/3 of the quantity?

The ratio of 4/3 to .16⅔ or 1/6 is the ratio of 12 to 2 or 6. The cost of the quantity is 6 times $.62½. $.62½=$.50+$.12½. 6 times $.50+6 times $12½=$3.75.

Sixth Grade.

Having interpreted the % symbol the work proceeds.

Percentage.

Example I. What per cent of .25 is .16⅔?

The ratio of .16⅔ to .25 is the ratio of 1/6 to ¼ or 2/12 to 3/12 or ⅔. ⅔=.66⅔ or 66⅔%.

Example II. Mr. A. sold land for $1200, which was 33⅓ less than cost. How much did the land cost?

Since $1200 is ⅔ the cost, the land cost 3/2 of $1200 or $1800.

Example III. $90 is 112½% of the price paid for a watch. What was the price paid?

Since $90 is 112½% or 9/8 of the price, the price is 8/9 of $90 or $80.

The Problems And Fractions Of Grades 4 A—6 A.

By Burtis C. Magie, Ph. D., Pd. D., Principal of Public School No. 18, New York City, (Manhattan).

Ciphering is a stenographic record of geometrical facts.

IN the following pages an attempt is made to discuss fractions and the principles upon which they are based according to the arrangement of the Manhattan Course of study.

The principles, or, as they are called, the problems, that are used as the ground work of fractions are three in number.

None of them appear by name previous to the fourth year. Without explicit formulation, however, the work of problem 1, to find a part (or several parts) of a number, and of problem II, to find how many times one number is contained in another, (of the same name), is done as partition and division in the grades of the first three years.

Probably in our city schools the children of those grades clearly understand in their division work, whether they are separating a number of things into groups with the purpose of finding the number of things in a group, or with the purpose of finding the number of groups. If they do not, the instruction has been faulty.

Six chestnuts were divided among three boys ; how many were given to each ?

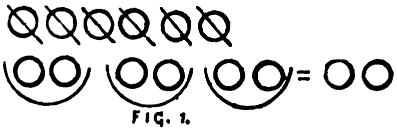


FIG. 1.

So also $\frac{2}{3}$ of 6.

If the child cannot do these examples, or, if hecannot explain them by objects or drawings, he should learn to do so before he proceeds further with division, with problem II, or with fractions.

Let it be emphasized that the child learns how to apply numbers to objects to solve practical examples, by using objects, and not symbols.

The acquisition of ideas of numerical relations should not be obstructed by the strangeness of the terms, by the greatness of the numbers, or by the lack of objective exercises.

In 4 A, problem I. deals with whole numbers. In advanced grades it deals with fractions.

At the beginning, as ¼ of 8, it takes the form of a shorthand direction for division (and multiplication) where the divisor is an abstract number, as it is generally called.

Divide 8 marbles into four groups, and find out how many marbles in one group. The multiplication is somewhat obscure, but becomes plainer as ¾ of 8.

If the work previous to 4 B has been well done, the pupil ought to find out how to do the multiplication of a fraction by a fraction without help. It is the idea, indeed, the *motif*, underlying concrete work that it shall enable the child to make his own advances. One-half of four, one-half of one, and one-half of a half, are not very great variations or steps of advancement when dealing with material realities, nor are they in mathmetics, unless the pupil is mystified by changes in symbols of whose meaning he is ignorant.

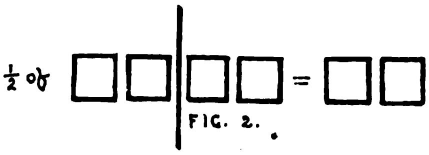
The steps are:  = 2 rectangles.

FIG. 2.

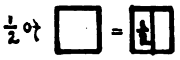
½ of 1 = 

FIG. 3.

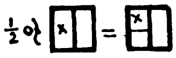
½ of one-half a rectangle = 

FIG. 4.

In 4 B, the problem is applied to fractions; that is to say, instead of being written, problem I, to find a part (or several parts) of a number, it might be written problem 1 A, to find a part or several parts of a fractional number.

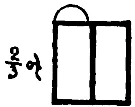
Find ⅔ of half a rectangle.  Divide the halves into ⅓

FIG. 5

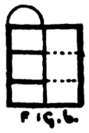


FIG. 6.

Two of these ½ of ⅓ are two parts, or two-sixths of the whole object, called so because six of them make the whole.

Find ⅔ of half a line. Let a line be drawn to show what the whole was, to measure the half, and separated from it by another line. Then

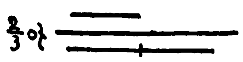


FIG. 7.

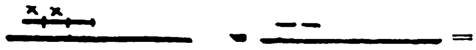
⅔ of ½ =  = two-sixths of the whole line.

FIG. 8.

In 5 A the problem is applied to mixed numbers. In 5 B problem I, takes its final form, as case I. of percentage.

Problem II., To find what part one number is of another, first appears in 4 A. It is in reality the case of true division in which the divisor, a number of the same name as the dividend, is often larger than the dividend ; but the answer instead of times, is parts and assumes a fractional form.

Six is how many times 3? is division ; 3 is what part of 6? is also division with a divisor larger than the dividend. The problem may also take these forms; 3 marbles are contained how many times in 6 marbles? What part of 6 marbles are 3 marbles.

Three marbles are what part of 6 marbles?

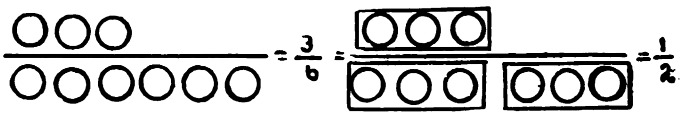


Fig. 9.

This, by the way, is a natural exhibition of reduction to the eye, useful as a device.

Six marbles are what part of three marbles?

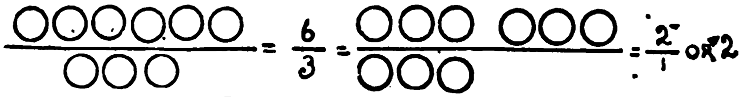


Fig. 10.

It is important for the teachers of the lower grades to see the effect that the problem work of their own grade has upon the grade above. An understanding of this matter will prevent a waste of energy. If the problem work is neglected in one class it must be made up in the next.

In 5 A the problem is applied to fractions. "What part of ½ a line is ⅓ of a line?

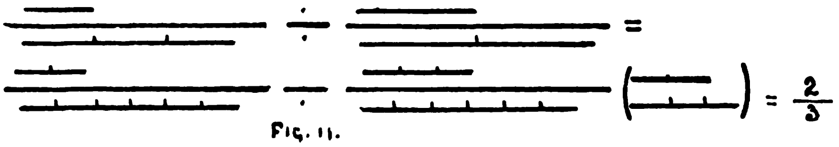


Fig. 11.

Or what part of ½ a rectangle is ⅓ of a rectangle.

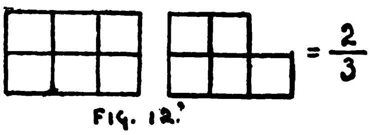


Fig. 12.

This it will be noticticed, is the exact process of a division. first, a reduction to the common measure ; second, the division of one numerator into the other.

In as much as the problem to find what part one number is of another applies alone to numbers of the same name, and *kind*, it only permits of division whose purpose is to find the number of parts: not division of a number whose divisor is an abstract number, as it is called.

If ⅔ of a lb. of candy cost $¾, how much will one lb. cost? does not come under problem II.

If candy costs $⅔ a pound, how many lbs. for $¾? does come under it.

The fact that the numbers must be of the same name demands the process of reducing to a common denominator.

In 5 B the only change under problem II. seems to be in the introduction of mixed numbers, and the greater complexity of the exercises. In 6 A the problem takes its final abstract form as the second case of percentage.

It is not intended by the phrase "abstract form" to intimate that graphic work should cease, but that the student ought to be able to handle with clearness examples with pure numbers.

He should now illustrate his numerical operations by drawings, for the sake of explanation, rather than to find out what the processes are from the concrete.

Four marbles are what per cent. of 12 marbles?

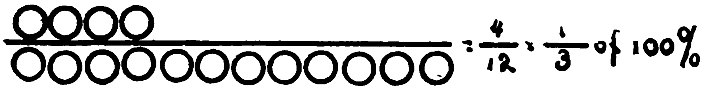


FIG. 13.

Problem III, to find a number, a part being given, begins in 5 A, and deals at first only with integers and thereby confines the grade to examples with concrete divisors in division of a fraction by a fraction.

It introduces the division of a whole number by an abstract fraction.

If ⅔ of a box of candy cost $6 how much does one lb. cost?

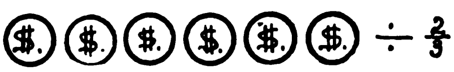


FIG. 14.

This may be read; If 2 parts contain $6 how many in one part and how many in 3 parts?

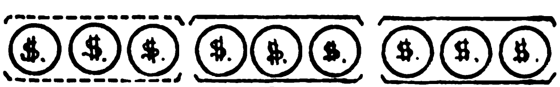


FIG. 15.

As in multiplication the abstract divisor refers to actions, and, when a fraction, it is an idiomatic direction to *divide* 6 dollars into (two) groups, and then to multiply the number (of dollars) in one group (by three).

If ⅔ of a line are 4 inches, how many inches in the whole line.

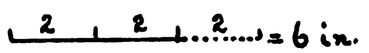


FIG. 16.

In 5 B the problem is applied to fractions, If ⅔ of a line are ¾ of an inch, how many inches in the whole line.

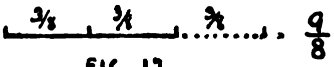


FIG. 17.

If $\frac{2}{3}$ of rectangle A $= \frac{3}{4}$ of rectangle B, what part of rectangle B is A?

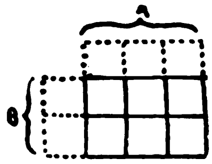


FIG. 18.

There are 9 small rectangles in A, and 8 in B. Therefore rectangle A$=\frac{9}{8}$ of rectangle B.

In 6 A the problem is applied to percentage as the third case, the percentage given to find the base. The pupil should be able to work freely with pure numbers, and use the concrete illustrations as already stated in regard to problem II. This ends the discussion of the problems.

The abstract number in mathematics seems to us the same thing that is meant by the general notion of logic or the abstract general concept of psychology. The abstract number and the abstract concept of relations (division, multiplication, etc.,) is that toward which training in arithematic tends, the acquisition of which is the aim of student and teacher alike.

An abstract concept is reached not, as is sometimes said, "by considering the quality apart from its object," but by considering many objects in which the quality subsists, many times. The concept, moreover, has more than one quality, each of which as an idea has to be slowly acquired from the objects, in as much as the different ideas are not gained all at once, but one after another.

The qualities which we regard as belonging to the abstract or last form of the concept are often, very different to those which we consider as belonging to the early concept.

A watch, for instance, is probably at first a noise-making toy: at the last a chronometer.

So number at first is a definite group of things, at last a measure of relation, a ratio, it is said : a thing almost too elusive to be impounded in a definition.

In the same way, a fraction is an object, a piece of a thing, and at the last a ratio, or quotient of two abstract numbers. The steps that intervene between the two conditions of thought, the qualities that must be assimilated before the first rude idea of a fraction which the child has who divides his apple with his brother, grows into the

There is no other science adapted to childhood in which an opportunity for such exercises is afforded in a degree nearly as great as is given in arithmetic.

Fractions in 4 A should begin with objects in the hands of the children, and not in the hands of the teacher, and the work should be so continued for a long time.

After handling the objects, narrating the principal operations performed, and expressing the opinion reached, sufficiently, advance should be made to graphic work.

Objects of various kinds should be drawn, separated in parts, the parts compared, and the result of the comparison drawn.

With the drawing, a new element of difficulty arises.

If the student is asked to draw a line and take half of it, it is difficult to arrange a way in which the whole does not remain. While the fraction still remains a material object, it is now more an object that is part of a whole.

Some devices show the fraction, the object, plainly; but they also show the whole, and associate it with the part.

A half of a potato, an apple, and many material objects may be drawn without introducing the whole more than it appears in work with the splints. It is better, however, generally, to draw the wanting part in some way different to the manner in which the fraction is drawn; thus, a third

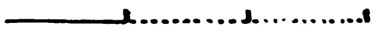


Fig. 19.

Practice in the work may be given by directing drawings of a *fraction* in various ways.

For example: Draw ⅓ in 5 ways.

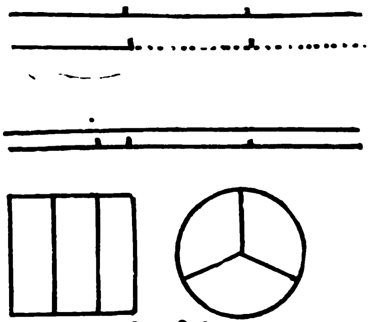


Fig. 20.

That the divisions of the rough drawings are not very accurate is not of great importance.

Draw ¼ and ½, each in two ways, and compare them. Is the result the same in both drawings?

The exercises develop the *piece-of-a-whole* element of the concept, and they lay a foundation for the narrative or expression of the physical acts done, in mathematical language.

But a very essential element of the fraction of the earlier grades has not yet necessarily appeared either in the objective or the graphic work: the element of name, or denomination.

The fraction of 4 A and 4 B, at any rate the additive and subtractive fraction, is a denominate number, and differs from denominate numbers ordinarily so called in that the scale of enumeration is subject to much greater fluctuations.

To include this name in graphic work is consequently essential.

The following device includes the name, develops a knowledge of the various uses of the denominator, and prepares the way for passing to the Arabic notation, and also aids in the transition of the concept of the fraction as a denominate number to that of an indicated division.

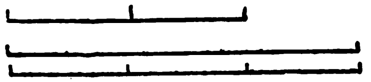


FIG. 21.

The upper line is the fraction or actual piece. The middle line is simply a fence or separation of the fraction from the measure. The bottom line is a measure, always accompanying common fractions in written arithmetic.

As a measure it gives a name, as a divided rule does, to the piece or fraction It tells the size of the fraction. It shows into how many pieces the unit on which the fraction is based has been divided.

It is not the basic unit except in the sense of a standard, any more than a figure or other symbol, two or three, or halves, or thirds would be the unit. It is representative; it is not the whole itself; which is shown in the case of a square, as well as the parts.

Some one, constant form ought to be the prevailing type of objective work. Pupils of 4 A should be able to handle it freely and quickly, but great care must be taken that one form of drawing is not the only one used. When one sort of illustration alone is employed, experience arouses suspicion that it ceases to be an object, and tends to become a symbol; and operations with it become "juggling with figures" nearly as objectionable as "juggling" with the Arabic symbols themselves.

The graphic object must be constantly varied.

Draw a half and a fourth.

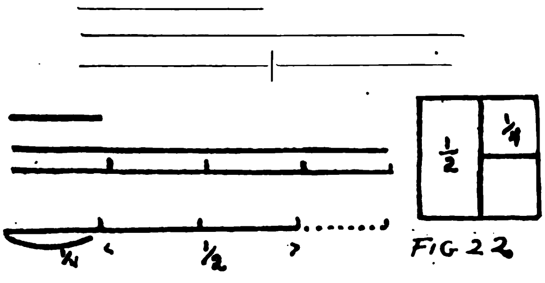


FIG 22.

Compare the half and the fourth.

How do they compare?

The half is twice as long as the fourth. The fourth is ½ of the half, 2 halves=1 fourth.

There ought to be little difficulty here, if sufficient work with tangible objects has been performed.

How do the half and the third compare, using rectangles?

The half has three rectangles, the third only two. The third is two parts out of three parts of the half, or ⅔.

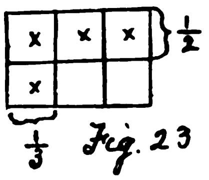


Fig. 23

Draw a half and write after it its number and its name.

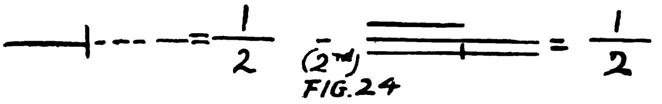


FIG. 24

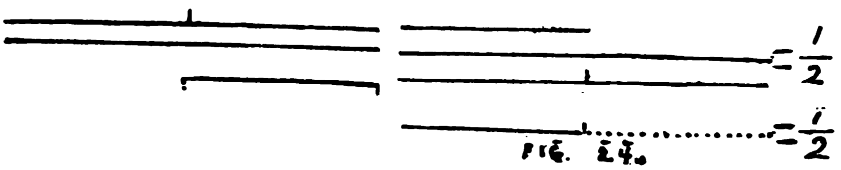


Fig. 24.

Draw a fourth and write its name in three different ways.

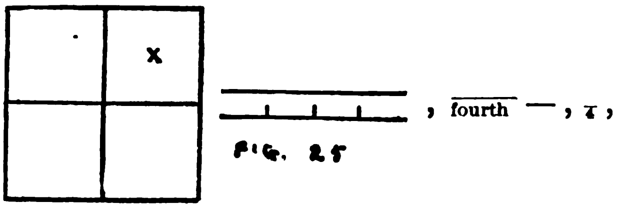


Fig. 25

The Arabic form of the denominator should be introduced very slowly, since its number associations are so strong. For a long time the child sees, or should see, in fractions only denominate numbers, units. He adds only numerators, he subtracts only numerators, he multiplies only numerators, he divides only numerators.

When reasonable skill is attained in graphic work it will be well to represent the drawings systematically by Arabic symbols.

Compare ⅓ and ⅙.

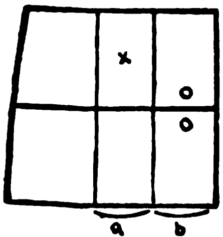


FIG. 26.

The rectangle

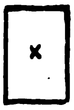


FIG. 27.

is half of the column a. Therefore $\frac{1}{6}$ is $\frac{1}{2}$ of $\frac{1}{3}$. The rectangles in column b make $\frac{1}{3}$ or $\frac{2}{6}$, and are twice as large as $\frac{1}{6}$.

First, the third and each piece of the standard was divided into two pieces, which gave 6 pieces in the standard. This made the pieces of the third the same size as the pieces of the sixth, and it is seen that there are two sixths in the third.

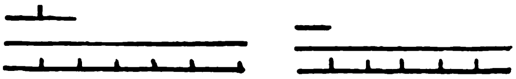


FIG. 28.

The work to be done in the grade should be systematically outline and followed, the fractional name being limited to $\frac{1}{10}$. It is:

(1) The idea of a fraction as a piece of an object having a special kind of a name.

(2) The comparison of fractions in series.

(3) The addition of proper fractions of the same denomination.

(4) Reduction of whole and mixed numbers to improper fractions.

(5) Reduction of improper fractions to whole or mixed numbers.

(6) Addition and subtraction of mixed numbers having fractions of the same denomination. [The fraction of the subtrahend not to be greater than the fraction of the minuend].

If not done before, the expression in Arabic symbols of the acts performed should now accompany the graphic operations.

The advanced work of 4 B consists, (the fractional named being limited to $\frac{1}{12}$), of

(7) Reduction, by comparison.

(8) Addition and subtraction of proper fractions of different denominations.

(9) Addition and subtraction of mixed numbers, of different denominations.

(10) Multiplication of a whole number by a fraction. (Prob. I.)

(11) Multiplication of a fraction by a whole number.

(12) To find one part of a fraction. (Prob. I.)

(13) To find several parts of a fraction (Prob. Ia.), multiplication of a fraction by a fraction.

There are but ten instances of reduction, in this grade. These four rectangles afford opportunity for objective work with them all.

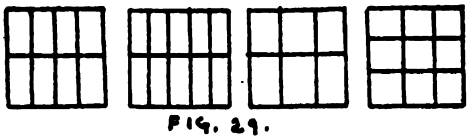


FIG. 29.

2, 4, 8. 2, 5, 10. 2, 6; 3, 6. 3, 9

Addition.

There should be no haste to reach the symbol stage. It should come from the *pupil's* desire to represent more easily and quickly. Once in a while the teacher, as it were, accidentally, uses symbols, without verbal suggestion. The children will pick the practice up themselves. They require no explicit direction to take short cuts that are accessible.

The correlative subtraction should accompany addition.

The subtrahend, however, considered as concrete is not capable of true presentation as a separate object from the minuend.

In the exercise, to take from ½ or 2/4, ¼, there is a tendency to represent the subtrahend by an object different to the two quarters of the minuend, thus:

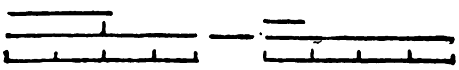


Fig. 31.

In reality the problem reads: From two-fourths take one of the fourths away; a child had two quarters of a dollar and gave one of those quarters away.

As an experiment the writer has requested several mature persons to represent the operation directed to be done by the expression, subtract two oranges from five oranges, with drawings; and in most instances with this result:

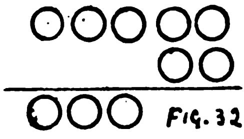


Fig. 32.

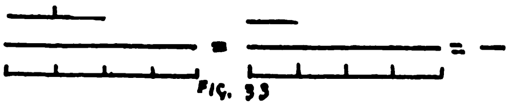


Fig. 33

The fact that the operations of addition and subtraction with the same numbers are necessarily different in the two processes adds variety and interest to the work.

It will be well to let the children invent original devices of concrete illustration.

The explanation or narrative of the acts done is the only analysis that need be required.

Thus: Add ½ and ¼.

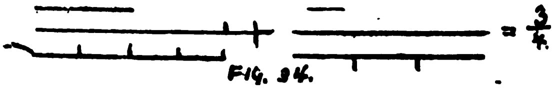


Fig. 34.

I first changed the half to quarters by breaking the half in two. I then changed the name of the standard, by breaking each part in two, also to quarters. I found there were three quarters.

In time the pupil should be able to see and then to state the opposite change in the symbol that corresponds to dividing the line or breaking it into pieces. It is not intended to suggest that the following questions, if asked at all, should be asked at one time; but to illustrate the probable course of thought in a pupil's mind.

"Why did you change the half?"

"To make all the pieces or fractions of the same size."

"What do the divisions of the standard show you?"

"The size of the fractions or pieces?"

"What was the first thing you did when you changed the halves to quarters?"

"I cut the half in two pieces."

"Did you do anything to the standard?"

"I cut every division in two."

"Why?"

"If the pieces of the fraction were not of the same size as the parts of the standard,—the standard would not give the true name."

"Whenever you make the fraction into smaller pieces, but do not make the fraction any smaller; what must you look out to do, so as to have the right name for the small pieces?"

"To divide each part of the standard into as many pieces as I divide each fraction piece into."

If the child finds these facts out himself, and expresses them himself, the exercise is practice in reasoning of the most valuable kind.

Such work would not seem to be beyond his capacity.

If he is helped in his discovery and generalization by the teacher the pupil receives less benefit from his labor, than he would without such aid; although it is not to be expected that a child should make systematic and progressive discoveries in a science without some guidance.

Too much time must not be given for the purpose of having every pupil make every discovery alone; nor too little. The object is to give him the power of making the discovery and if the boy more slow to generalize and express, acquires the ability after a number of attempts in which he has failed, although his class-mates may have succeeded, the desired end has been finally attained.

Add 1, $\frac{1}{2}$ and $\frac{1}{4}$.

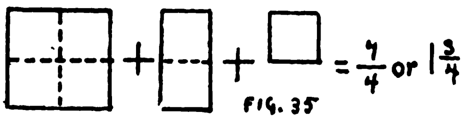


FIG. 35

This work can be done "mentally" and soon very quickly, by looking at a single divided square, or divided line. But quickness is not the aim,—however desirable.

The multiplication of the whole number by a fraction involves a very simple advance.

How many are four halves? Eleven thirds? What one of the four processes in arithmetic is employed to do this? Draw the example, multiply $\frac{1}{2}$ by 4.

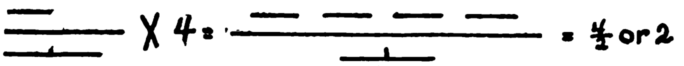


FIG. 36.

It may be that some of the children will do this.

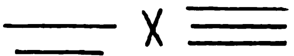


FIG. 37.

Why cannot the 4 be drawn ?

Attention is here necessarily directed to the fact that the multiplier is an abstract or directive number, *i. e.*, a portion of a shorthand direction to do something, and not a number of objects.

The multiplication of a whole number by a fraction is simply the application of problem I under new circumstances.

It may be that the condition of the class will not necessitate any distinction between the last two cases.

But the instructor is always to bear in mind that what the child can do is not at all necessarily what the child can classify and express. His unconscious, unscientific, knowledge is always far ahead of his classified and expressable knowledge. In mathematics the teacher can rarely use a term without giving to it, no matter how contrary to his purpose, a greater intension of meaning that it can have for a child not very far advanced in arithmetic.

To multiply cases unnecessarily leads to confussion ; to omit necessary cases leads to obscurity and ultimately to failure.

As work advances the ideal of the fraction changes gradually. In addition and substraction it has been a piece. In multiplication the multiplier has been a combination of division and multiplication. But now in examples such as these :

At $6 a day, how much would a man earn in 2 days ?

At $6 a day, how much would a man earn in $\frac{3}{4}$ days ?

the analogy impresses itself on the learner's mind. The multiplier in both cases *is* a multiplier, In reflecting on the example he begins to think of the second multiplier as a single number as much as the first: in operation he still thinks, in the second, instance of two numbers, with one of which he divides, with the other of which he multiplies.

When the fraction has become a single number to his mind application of fractions to practical or concrete problems, have no more difficulty for him than corresponding examples in integers.

The work of finding a part of a fraction presents something new.

In multiplication of fractions we have the unscientific fact o two numbers with exactly the same name and the same appearance which express two entirely different meanings.

$\frac{1}{2}$ x $\frac{1}{2}$ = ? The first $\frac{1}{2}$ represents an object: the second $\frac{1}{2}$ represents acts.

The problem materializes in this form

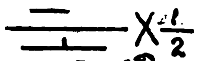


FIG. 38.

It is true that as a direction the ½ has been long familiar; but in multiplication it is to assume the new character of a fraction that is not a piece, and gradually the fraction that is a piece changes its nature, and the indicated division idea prevails, until fractions assume the character of pure numbers that they ultimately have in the mind of adult arithmeticians. The graphic work is simple.

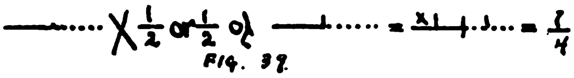
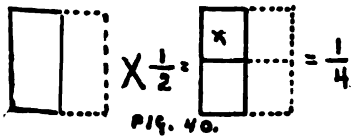


FIG. 39.



The corresponding symbool work grows out of this.

The first step was to reduce the "fraction" object into pieces small enough to be divided into groups ; until it was a multiple of the dividing denominator.

The second step was to make the pieces of the standard or unit of the same size.

The third step was the division by the denominator.

The fourth step was "the taking" of the pieces in one group.

There is nothing in this that the child ought not to do without help; either with objects or with symbols.

Other graphic work is:

I. ½ x ⅓=?

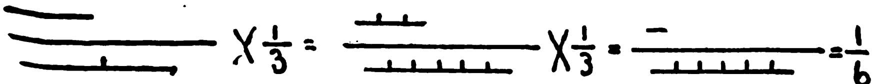
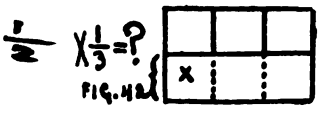


FIG. 41

Gradually the number of lines drawn can be lessened.

The direction of the multiplying ⅓ to divide the multiplied half in three is prettily exhibited in the square or rectangle.

The necessity of dividing the pieces of the standard when the fraction piece is divided, in order to obtain the name, also appears. In reduction the necesssity of dividing the fraction piece is equally plain.



II. ½ of ¾=?

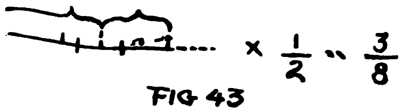


FIG 43

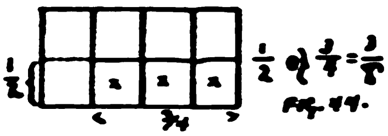


Fig. 44.

It is to be remembered that although some of these drawings, especially in division, may seem complicated to one unused to such graphic illustration, the child soon becomes very familiar with their form. They constitute a universal *language* and one that is free from the ambiguities of many arithmetical expressions.

The advance to find several parts of a fraction is easy: if practiced considerably with objects in the preceeding case, pupils will probably need no guidance in this one.

½ x ⅓=?

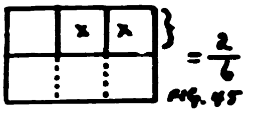


Fig. 45

(⅔ of ½ =)

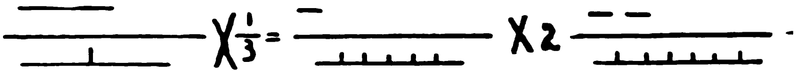


Fig. 46.

The corresponding operations with symbols.

⅓ of ½ x 2 = ⅙ x 2 = 2/6.

By inspection of the objective work in multiplication of fractions we see that the first result of drawing the dividing line is to reduce the fraction to a higher denomination. When we take *one* of the parts of the divided fraction, we divide the numerator. So that we first multiply and then divide the numerator. These two steps cannot affect the answer since they neutralize each other. If they are omitted it is only necessary to multiply the denominator. Where the multiplying numerator is more than one, then the numerators must also be multiplied. Hence the common rule, which is thereby seen to be a "short" process.

Where the numerator of the multiplicand consists of several units or pieces the steps of the process are seen to be as follows:

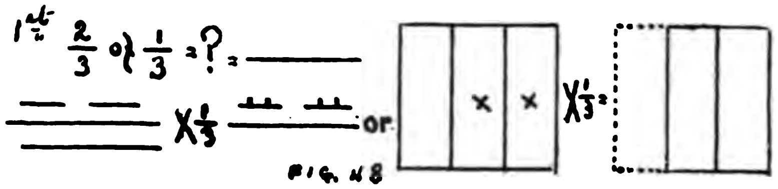
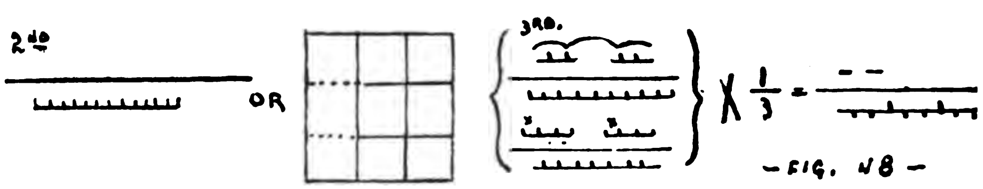
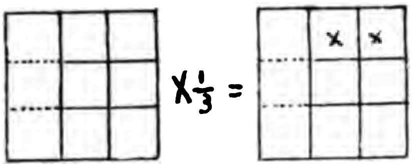


Fig. 48



– Fig. 48 –

OR



The corresponding symbol work is as follows:

$\frac{2}{3} \times \frac{1}{3} -$ 1st, $\frac{6}{\ }$;
2d, $\frac{\ }{9}$;
3d, $\frac{6}{9} \times \frac{1}{3} - \frac{2}{9}$.

Where the numerator of the multiplicand is a multiple of the other denominator the reduction is omitted, and the division is made directly, and this leads to a preliminary, as it were, or partial concellation.

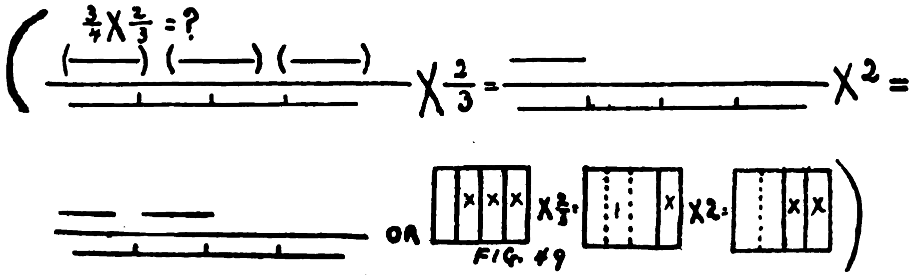


FIG. 49

Previous to grade 5 A it has been supposed that the common denominator shall have been found by inspection, at least by a natural and necessary sub-division of the parts in graphic work.

The largest multiple in grade 5 A required for application to fractions is 20, hence the work is of a simple character.

The following device explains itself:

$\frac{1}{2} = \frac{1}{4} = \frac{3}{6} = \frac{4}{8} = \frac{5}{10} = \frac{6}{12} = \frac{7}{14} = \frac{8}{16} = \frac{9}{18} = \frac{10}{20}$, the limit.
$\frac{1}{4} = \frac{2}{6} = \frac{3}{9} = \frac{4}{12} = \frac{5}{15} = \frac{6}{18} = \frac{7}{\ }$
$\frac{1}{9} = \frac{2}{18} = \frac{3}{\ }$
$\frac{1}{3} = \frac{2}{6} = \frac{3}{9} = \frac{4}{12}$
$\frac{1}{4} = \frac{2}{8} = \frac{3}{12} =$

Common multiple by objects.

I. Draw a row of two rectangles and also a row of 3 rectangles.

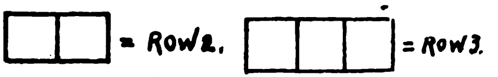


FIG. 50.

II. Make two rows of row 2

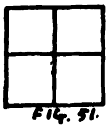


FIG. 51.

How many rectangles in the multiple of row 2? 4 rectangles.

How many rectangles in 3? 3 rectangles.

III. Make 2 rows of row 3

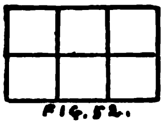


FIG. 52.

How many rectangles in multiple of row 3? 6 rectangles.

IV. Make 3 rows of row 2.

How many now in the multiple of 2, and in the multiple of 3? 6 in each.

How would you discover a rectangle that row 3 and row 4 will go into an exact number of times.

First get a multiple of row 3 larger than row 4. Then get multiple of row 4, larger than the multiple of 3, and so on until the rectangles have the same content.

This will give the *least* common multiple.

The concrete soon merges into symbols.

The following device enables the student to find any *least* common multiple by figures.

2 — 4 — 6 — 8 — 10 — 12 — 14.
3 — 6 — 9 — 12.
4 — 8 — 12.

If there are no common factors, a rectangle representing the product of the two given numbers gives the least common multiple, the number of rows one way being considered directive, multiplicative, or abstract. Where there are common factors in two given numbers, the *common* multiple can readily be found by forming rectangle representing their product.

Division of fractions is first taken up in grade 5 A.

The problem that leads to division of fractions is problem II. As already pointed out, as well as from the nature of the thing, problem II. relates to numbers of the same name, quantities of the same kind. When the quantities are fractional, they must not only be of the same kind, as chestnuts or apples, but they must also be of the same size, or have a common denominator.

The following statement of the different cases provides for the diffculties that might arise in the pupil's mind.

I. To divide fractions where the divisor and dividend are of the same kind of things:

(A) When the dividend is larger than the divisor.

(1) A whole number by a fraction.

(2) A fraction by a fraction.

(B) Where the dividend is smaller than the divisor.

(1) A fraction by a whole number.

(2) A fraction by a fraction.

Where the distinctions are too minute, the good judgment of the teacher will abridge them.

(A 1) How many lbs. of candy can be bought for $6. at $½ a pound?

Or, how many boys will receive half a stick of candy if three sticks are to be divided?

How many times will ⅓ of a rectangle an inch square, be contained in two such rectangles?

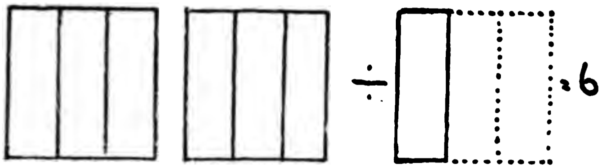


FIG. 54.

These examples are simply to find how many times one number is contained in another of the same name.

How many lbs. of candy can be bought for $½ at $¼ a pound?

Or, how many quarter inches in one half an inch.

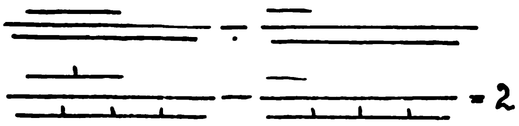


FIG. 55.

How many times will half a square yard contain one-third of a square yard?

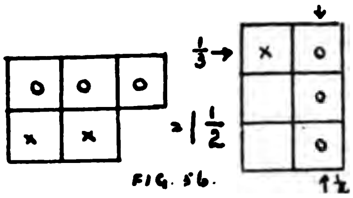


FIG. 56.

(B1) This is an application of the problem to find what part one number is of another.

(A2) How many pounds of candy can be bought for $¼ at $2 a pound?

(B2) How many pounds of candy can be bough for $¼ at $½ a pound?.

How many hours will it take a snail to travel ¼ of a rod if it travels ½ a rod in an hour?

What part of ½ a square yard is ⅓ of a square yard?

In 5 B the short method of inverting the divisor, if it has not been done before, may be introduced. When this is done the fractions become abstract, or pure numbers. The process of division then becomes a machine, that does our thinking for us. It may be mentioned in passing, that even when the divisor is concrete the inversion of the divisor can be used, and the process explained as the omission in the reduction to a common denominator of the steps that change the denominator.

There is another reason why the process of inverting the divis should be sharply differentiated from the method of comm denominator.

In 5 A problem III. is introduced, to find a number a part bei given. In that grade the given part is restricted to integers. 5 B it may be a fraction.

Under that problem may be classed examples in division fractions in which the dividing number has a different name fr the dividend: as it is generally expressed, where the divisor is abstract number. Thus:

If $\frac{2}{3}$ lb. of candy cost \$$\frac{3}{4}$, how much will one lb. cost?

That it is a case of division appears from the analogy of t corresponding integral example: If 2 lb. cost \$3, how much w 1 lb. cost?

The example may be read in this way:

If \$$\frac{3}{4}$ are in 2 parts, how many \$ in 3 parts?

$\frac{3}{4} \times \frac{1}{2} \times 3 = \frac{3}{4} \times \frac{3}{2}$, and we have the divisor inverted.

In fact a common denominator does not appear in this kind o division when objects are used.

The second general case of division of fractions is as follows:

II. To divide fractions where the divisor is an abstract number.

(A) Where one part is given.

(B) Where several parts are given.

(A) If \$$\frac{3}{4}$ buy $\frac{1}{3}$ lb. candy, how much for 1 lb.? Read if $\frac{3}{4}$ is 1 part, how much is 3 parts.

(B) If \$$\frac{3}{4}$ buy $\frac{2}{3}$ lb., how much for 1 lb. If \$$\frac{3}{4}$ are 2 parts, how much are 3 parts?

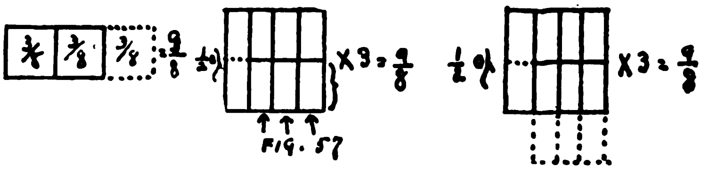


FIG. 57

These two kinds of division now coalesce in the mechanical operations of numbers, and become the one process of division.

Denominate Numbers In The Fourth And Fifth Years.

By WILLIAM J. O'SHEA, Principal Public School 75, New York City.

IN the course of study it is designed that this work shall be begun in Grade 4 A and continued successively in all the other grades until its completion in 7 B.

4 A.

In beginning the subject of Denominate numbers in 4 A, it will be found profitable to talk with the pupils first about facts with which they are familiar. Place coins where they can be seen. Let the pupils tell what they know about them and their relative value. Question them for instance as to how much more may be bought for a dollar than for a quarter, how many times as much for a half dollar as for a dime. Ask the class to name familiar things whose lengths are generally expressed in *inches*, such as pencils, rulers, and the length and width of a book; other things whose lengths are ordinarily expressed in *feet* as the length of a board, the dimensions of a room, the height of a door, the width of a house and the depth of a lot. Again, question the children as to their knowledge of the denominations that would be used in buying and selling butter, tea, sugar, milk, syrup, oil, potatoes, apples, etc.

After this rehearsal, they are better prepared for more difficult questions in the use of units of measurements.

In teaching Federal money simple problems in making change should frequently be given, and the children taught to arrive at results by the method employed in stores. In giving such questions as:

"*How much change from a dollar shall*
I get if I make purchases amounting in all to 33 *cents*"

insist upon the pupils finding the change due by making easy additions to the 33 cents until they reach the amount of one dollar, thus:

33+(7+60) or 67 cents = change.

This method has the advantage of being not only more practical but also easier than that of subtracting 33 from 100.

In teaching Dry and Liquid measures we should bring into use the cubic inch taught in the Primary grades, and utilize the ability of the children to make paper cubes. Let the class find, by actual experiment, how many times this paper box would have to be filled with sand, for instance, and emptied into the dry pint measure to fill the latter ; how many times it would be emptied into the liquid pint measure before this measure would be full. Repeat the experiment so far as the dry quart and the liquid quart are concerned and the difference between the capacities of the dry pint and quart and the corresponding liquid measures will be best taught. Impress upon the class that the cubic inch is the only unit common to both measures.

In teaching linear measurements we should first see that the children know how to use the ruler correctly and how to draw lines neatly. We should then ask them, in turn, to find in the presence of the class the actual measurement of objects within their reach, such as the length of the blackboard, the dimensions of their desks, and the width of door, leading them to notice under what circumstances it is appropriate to use the terms "length" "width" "height" and "depth."

4 B.

In this grade no change is made either in the tables to be used or in the denominations to be considered. Exercises in the comparision of units of measurements, however, are added to the practical use of the same units. Also, under the head of "Applications," *simple problems* are added to the requirement that actual measurements as far as practicable be made.

These requirements will be satisfied if the work as outlined in this article for 4 A in Long, Dry and Liquid measures be extended so that the *relative* lengths of the inch, foot and yard be observed in long measure and similar treatment accorded to the different denominations in the other tables prescribed for this grade. Compare, for instance, a yard with a foot; 2 feet with 2 inches, a bushel with a quart, a dry quart with a liquid quart, the length of a day with that of an hour, 2 days with 6 hours.

Such simple problems as the following would be appropriate:

30 gallons of milk will last how many times as long as 2 gallons? as 4 quarts? as 1 quart?

If a bag of rice weigh 1 lb., how many ounces will ¾ of a bag weigh?

What is the cost of 5 lbs., at a cent an ounce?

How many quarts are in 3 pecks?

5 A.

The course in Denominate Numbers for this grade is as follows:

1. Reduction to the next lower or higher denomination.
2. Addition and multiplication (to illustrate a principle o numberation).

3. Actual measurements; comparative judgments.
4. Measurement of commensurate surfaces and boxes by application of the square inch and the solid unit (cu. in.)

Here, for the first time in the course, the term "reduction" or "reduce" is used.

Ordinarily the word "reduce" means to lessen or to make smaller, as when we refer to a man as one who is reduced in flesh, in weight or in circumstances, or when we speak of reduction in the number of hours of labor, in the expenditures of a firm or in the speed of a locomotive. For this reason it might be well to call the attention of the class to the fact that, in arithmetic, the term "reduction" has no such meaning; that when we reduce from one denomination to another we do effect a change, but a change in *form* only and not in value or weight.

The reduction called for in this grade can be exemplified in such problems as,

Reduce 5 lbs., to ounces (reduction descending)
" 8 ounces to lb., (reduction ascending)

While we should receive from a child any reasonable explanation of his work we should prefer to have him use 16 as the multiplier in the first example and explain the process by saying that the *number* of *ounces* will be 16 *times* the *number* of *pounds*. In like manner we should like to hear him explain the process employed in solving the second problem by saying the *number* of *pounds* will be $\frac{1}{16}$ of the *number* of ounces. The reason for this will be better seen in more lengthy examples in reduction.

By referring to heading 2 we learn that addition and multiplication (abbreviated additions) are introduced only to illustrate a principle of numeration—or, for the purpose of showing that denominate numbers are added and multiplied as are simple numbers with the exception that, in denominate numbers, borrowing, carrying and reducing are done by a *varying* instead of by a *uniform* scale as is the case in simple numbers.

e. g.

Add	5,987
	258
	765
	3,456
	929
	11,395

In simple numbers 10 units of a lower order always equal 1 unit of the next higher, as 10 units 1 ten, 10 tens= 1 hundred, etc.

		4	8
	bu.	pks.	qt.
Add	3	3	6
	5	2	5
	4	1	4
	3	3	3
	17	3	2

In the above example it will be seen that 8 units of the lowest order make 1 of the next higher, and 4 of the second order make 1 of the third.

The requirements contained under heading 3 are met by continuing in the course suggested in this article under the same heading in the previous grade and by comparing the judgments of the pupils as to the relative lengths and widths of objects in the room and by making such other comparisons as suggest themselves to the teacher.

The pupils having learned that a square inch is a square erected on a 1-inch line, are now prepared to measure commensurate surfaces and the work required under heading 4 of this grade may be conducted on lines suggested by the following questions:

a How many square inches in a 2-inch square?
How many square inches in a 3-inch square?
How many square inches in a 4-inch square?

b What is the difference between a 2-inch square and 2 square inches? between a 3-inch square and 3 square inches?

c How many square inches in a surface 1 inch wide and 2 inches long? 1 inch wide and 4 inches long?

d How many square inches in a surface having the same length as the last named and twice its width?

Test the correctness of answers by actual measurements in each case.

Again, rehearse the pupils on the meaning of a cubic inch or a 1-inch cube, and by means of a number of such cubes show by actual experiment how many cubic inches in cubical boxes 3 inches, 4 inches and 5 inches long, respectively.

If this work is thoroughly done, it will materially aid the pupils when they reach the higher grades to get correct conceptions of the work of those grades in finding surfaces and contents.

5 B.

Comparative judgments are largely a review of previous grades. Compare lengths, widths and thicknesses of solids and lengths and widths of surfaces.

Reduction of two successive denominate numbers is new matter. In 5 A the pupils were asked to reduce to the next lower or higher denominations. Here they are asked to go one step further. The explanations for the processes are the same as those employed for similar problems in the previous grade.

Addition and multiplication are taken in review while subtraction and division are advanced work (to illustrate principles involved).

Take the examples:

						24	60
					days	hrs.	min.
1°	From	865	2°	From	6	3	45
	Take	589			4	10	50
		276			1 —	16 —	55

It will be seen that the process as applied to simple numbers is *uniform*, 10 of a lower order (units, for example) being equal to 1 of the next higher, while in denominate numbers, the number "carried" or "taken from" depends on the table as well as the denomination used.

Suggestive problems :

Cost of 3 bu. 3 pk. @ 10 cents per pk.?

Cost of 5 bu. 2 pk. @ 50 cents per bu.?

Bought 3 gal. 2 qt. @ 10 cents per gal. and sold the same @ 3 cents per qt., Gain?

What is the value of a mile of wire at a cent a foot?

In this, as well as in the other grades of the course, it is believed that the most effective work in Denominate Numbers is done when they are taught concurrently with simple numbers, and when due consideration is given in each instance to the review of work assigned to the preceding grade.

Decimals.

By M. A. Bailey,

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IN the public schools of New York City there are seven school years preparatory to the high school, each year being divided into *A*, first half, and *B*, second half. Thus, 4*A* means the first half of the fourth year. Following, designated by *C*, is the course of study for decimals, and the treatment, *T*, as generally practiced. The pupil is not permitted to use a text-book before the 5 A grade, and not advised to do so until the 6 A grade.

Before 4 A. Prior to the 4 A grade decimals are not referred to as such, but the decimal point is used to separate dollars from cents, and cents are taught as parts of a dollar.

4 A. *C.* "Fractions to $\frac{9}{10}$ and to .99 .... addition and subtraction, easy decimal fractions."

T. "After fractions have been developed objectively through tenths, they are written in any correct way, generally with figures above and below a line—the upper showing the *number* of parts, the lower the *name* of the parts. Pupils are then shown that tenths, being decimal divisions of units as units are of tens, may be written on the right of units and separated by a decimal point; hundredths, being tenths of tenths as well as hundredths of units, may be written on the right of tenths. In numeration the number of tenths, or of hundredths, or of both combined as hundredths, are read as integers, and the names of the parts given according to the number of decimal places. In addition and subtraction the principle is carried out that when numbers have the same name (as units, tens, tenths and hundredths) they may be added and subtracted and the result will be of the same name."

Multiplication and division are applied to Federal money only. In multiplication the principle is carried out that a product has the same name as the multiplicand, the multiplier being an abstract number. In division, when the divisor is abstract the quotient has the same name as the dividend. When money is divided by money, the dividend and divisor must have but one common name, and the quotient shows the number of times the dividend contains the divisor.

4 B. *C.* "Fractions to $\frac{9}{10}$ and to .99. Addition, subtraction and multiplication, easy common and decimal fractions, multipliers

to be integers. To find a part of a fraction, common as decimal."

5 A. *C.* "Fractions to $\frac{19}{20}$ and to .999. Division of fractions, only easy common and decimal; common fractions, decimal fractions and per cent. compared."

5 B. *C.* "Fractions to ^{99} and to .999. Per cents, common and decimal fractions compared."

7. "In multiplication pupils are taught objectively that tenths multiplied by tenths produce hundredths. This is applied to all multiplication by a decimal. In division, when the divisor is a decimal, it is changed to an integer by moving the decimal point to the right, and the same number of places in the dividend." Such examples as (c) 4.86 ÷ .12 are usually reserved for this grade.

6 A and 6 B. *C.* "Fractions to $\frac{99}{100}$ and to .9999. Four types of problems as applied to decimals. (1) To find part of a number. (2) To find what part one number is of another. (3) To find a number, a part being given. (4) To find a number, the number plus or minus a part being given. A man sold a horse for $160, at a loss of $\frac{1}{5}$, or 20%."

7 A and 7 B. Decimals of any number of places may now be used in all operations as the occasion may arise.

Following is a logical presentation of decimals:

DEVELOPMENT. A common fraction whose denomination is some integral power of 10 is a decimal fraction.

ILL. $\frac{3}{10}$, $\frac{37}{100}$, $\frac{379}{1000}$ are common fractions, called decimal fractions.

A decimal fraction may be resolved into a series of decimal fractions whose numerators are less than ten and whose denominators are integral orders of ten, beginning with the first.

ILL. $\frac{379}{1000} = \frac{300}{1000} + \frac{70}{1000} + \frac{9}{1000} = \frac{3}{10} + \frac{7}{100} + \frac{9}{1000} =$ 3 *tenths*, 7 *hundredths*, 9 *thousandths*.

1. Resolve $\frac{3714}{10000}$ into such a series. *Ans.* 3 *tenths*, 7 *hundredths*, 1 *thousandth*, 4 *ten-thousandths*.

In such a series the same conditions prevail as in integers—viz., the largest number of any order (denominator) is 9, and 1 of any order (denominator) makes 10 of the next lower.

ILL 1 tenth 10 hundredths; 1 hundredth = 10 thousandths, etc.

The names of the orders (denominators) may be expressed by relative position, the same as in integers, if a decimal point is placed before the first decimal order.

ILL. 3 *tenths*, 7 *hundredths*, 9 *thousandths* may be written .379.

2. Express the orders by relative position: 3 *tenths*, 7 *hundredths*, 1 *thousandth*, 4 *ten-thousandths*. *Ans.* .3714.

THE DENOMINATOR. The denominator of a decimal fraction is the same as the denominator of the last fraction in the series.

ILL. $\frac{379}{1000}$ [illegible] $\frac{7}{100} + \frac{9}{1000}$; the denominator of $\frac{379}{1000}$ is the same as the denominator of $\frac{9}{1000}$.

3. What is the denominator of .3714? ANS. 10,000; looking at 3, we say *tenths;* at 7, *hundredths;* at 1, *thousandths;* at 4, *ten-thousandths.*

NUMERATION. Read a decimal as a common fraction; first its numerator, then its denominator in the ordinal form.

5. Read .27. *Ans.* 27 *hundredths;* the numerator is 27 and the denominator 100.

NOTATION. Write the numerator as in common fractions, and place the decimal point so as to make the name of the last order the name of the denominator.

6. Write 27 hundredths. Ans. .27. We write the numerator as in common fractions, 27. Looking at 7, we think *hundredths;* at 2, *tenths*, and write the decimal point.

ADDITION AND SUBTRACTION. Write units of the same order in the same column.

MULTIPLICATION. Multiply the numerators for a new numerator and the denominators for a new denominator—i. e., multiply as in integers and point off as many decimal places in the product as there are decimal places in both multiplicand and multiplier.

7. Multiply .23 by .7.

$$\begin{array}{r} .23 \\ .7 \\ \hline .161 \end{array}$$

The numerators are 23 and 7; in multiplying the numerators for a new numerator, we multiply as in integers, 23 by 7.

In multiplying the denominators for a new denominator, we move the decimal point in the product as many places to the right as there are decimal places in both multiplicand and multiplier.

DIVISION. Divide the numerators for a new numerator and the denominators for a new denominator—i. e., divide as in integers and point off as many decimal places in the quotient as those in the dividend exceed those in the divisor.

8. Divide .161 by .23.

$$\begin{array}{r} .23).161(.7 \\ 161 \\ \hline \end{array}$$

The numerators are 161 and 23; in dividing the numerators for new numerators, we divide as in integers, 161 by 23.

In dividing the denominators for a new denominator, we point off as many decimal places in the quotient as those in the dividend exceed those in the divisor.

9. Divide .161 by .0023.

$$\begin{array}{r} .0033).1610(70 \\ 1610 \\ \hline \end{array}$$

We can divide the numerators, 161 by 22, but we cannot divide the denominators, 1000 by 10000. Before proceeding, we must reduce the fractions to equivalent fractions having a common denominator; we then have .1610 ÷ .0023.

Hence, if the number of decimal places in the dividend is less than the number of places in the divisor, before dividing, reduce to equivalent fractions having a common denominator—i. e., annex ciphers to the dividend until the number of places in the dividend is equal to the number of places in the divisor.

Arithmetic In 6 A Grade.

By Frank H. Hall, Superintendent of Illinois Institution for the Education of the Blind, Jacksonville, Ill.

Number, Magnitude and Ratio.

NUMBER has two aspects,—a magnitude aspect and a ratio aspect. In the equation, 6+3 9, each number mentioned stands in thought for a magnitude ; but each is the ratio of the magnitude which it calls into consciousness, to another magnitude suggested by the number, 1. In the equation, 3 multiplied by 2=6, the "6" and the "3" should stand in thought for magnitudes, and the "2" for the ratio of the suggested magnitudes—of the magnitude 6 to the magnitude 3. But, as in the first equation given, both the "6" and the "3" stand for ratios; each for the ratio of the magnitude suggested by itself, to another magnitude suggested by the number, 1. Moreover the "2" has a magnitude aspect when thought of in connection with the "3"—2 threes.

It will thus be apparent that numbers are doubly suggestive. They may suggest magnitude ; they may suggest ratio. Sometimes the magnitude aspect should be uppermost in consciousness; sometimes its ratio aspect is that to which the mind should attend. Number *is* ratio ; but it suggests magnitude oftener than it suggests that which it *is*. By virtue of its being ratio it is suggestive of magnitude ;—and there are *two magnitudes for every ratio.*

"Grade 6 A."

The first and principal danger in the work of "Grade 6 A," is that the pupil will spend his strength in figure juggling. To obviate this the teacher must provide many simple problems to be used as preliminary to the "slate work" usually required. Especially important is the *order* in which these so-called *mental problems* are given. Consecutive problems should usually differ essentially in respect to the relations of the quantities involved.

"Four types of problems (as applied to integers, common and decimal fractions).

(1) To find a part of a number.
(2) To find what part one number is of another.
(3) To find a number, a part being given.

(4) To find a number, the number plus or minus a part being given."

To drill the pupils for days or weeks upon subdivision (1), then upon (2) for a similar period, afterwards upon (3), etc., would not be nearly as effective in training into thoughtful habits, as to drill upon all of them each day. Indeed the first method emphasizes figure manipulation ; the second method emphasizes the discerning of quantitative relation.

The teacher adopting the first method might assign the following lessons:

(a) Find $\frac{2}{3}$ of 24. (b) Find $\frac{2}{3}$ of 36. (c) Find $\frac{2}{3}$ of 48. (d) Find $\frac{3}{4}$ of 48. (e) Find $\frac{3}{4}$ of 16. (f) Find $\frac{3}{4}$ of 24. (g) Find $\frac{2}{5}$ of 10. (h) Find $\frac{2}{5}$ of 15. (i) Find $\frac{2}{5}$ of 20. (j) Find $\frac{2}{3}$ of 3246. (k) Find $\frac{3}{4}$ of 4656. (l) Find $\frac{2}{5}$ of 7245.

The teacher adopting the second method might assign the following lesson:

(1) Find $\frac{2}{3}$ of 24. $\frac{2}{3}$ of $\frac{24}{29}$= $\frac{2}{3}$ of 2.4 (to be read 24 tenths)

(2) 12 is what part of 24? $\frac{12}{29}$ is what part of $\frac{24}{29}$? 1.2 (to be read 12 tenths,) is what part of 2.4 (to be read 24 tenths.)

(3) 24 is $\frac{2}{3}$ of what number? 24/29 is $\frac{2}{3}$ of what number? 2.4 is $\frac{2}{3}$ of what number?

(4) 24 is $\frac{1}{3}$ more than what number? $\frac{24}{29}$ is $\frac{1}{3}$ more than what number? 2.4 is $\frac{1}{3}$ more than what number?

(5) 24 is $\frac{1}{3}$ less than what number? $\frac{24}{29}$ is $\frac{1}{3}$ less than what number? 2.4 is $\frac{1}{3}$ less than what number?

Problems arranged as above will almost force the child to consider the magnitude involved. He can scarcely "get the answers" in any other way.

It will be observed, too, that the proper solutions of these problems gives a complete foundation for the work in

PERCENTAGE.

Although all the cases in percentage are not required in this grade, the pupil who is familiar with the magnitude relations presented above, would need only to know that *per cent means hundredth or hundreths* in order to solve the following:

(1) Find 66 $\frac{2}{3}$% of 24. 66 $\frac{2}{3}$% of $\frac{24}{29}$= 66 $\frac{2}{3}$% of 2.4= (to be read 24 tenths.)

(2) 12 is what per cent of 24? $\frac{12}{29}$ is what per cent of $\frac{24}{29}$? 1.2 (to be read 12 tenths), is what per cent of 2.4? (to be read 24 tenths.)

(3) 24 is 66 $\frac{2}{3}$% of what number? $\frac{24}{29}$ is 66 $\frac{2}{3}$% of what number? 2.4 is 66 $\frac{2}{3}$% of what number?

(4) 24 is 33$\frac{1}{3}$% more than what number? $\frac{24}{29}$ is 33$\frac{1}{3}$% more than what number? 2.4 is 33$\frac{1}{3}$% more than what number?

(5) 24 is 33$\frac{1}{3}$% less than what number? $\frac{24}{29}$ is 33$\frac{1}{3}$% less than what number? 2.4 is 33$\frac{1}{3}$% less than what number.

Pupils trained by means of problems arranged as here suggested, will seldom find difficulty in determining to "which case" a percentage problem belongs.

DENOMINATE NUMBERS.

It is easy to emphasize the magnitude idea in denominate number problems. Review work arranged somewhat as in the following groups in invaluable for this purpose.

(1) Thirteen cents are——dime and——cents.
(2) Thirteen inches are——foot and——inch.
(3) Thirteen days are——week and——days.
(4) Thirteen quarts are——gallons and——quart.
(5) Thirteen pints are——quarts and——pint.
(6) Thirteen quarts are——peck and——quarts.
(7) Thirteen pecks are——bushels and——peck.

Give the measurement of each of the following:

(1) The perimeter of a 2-inch square; of a 3-inch square.
(2) The area of a 2-inch square ; of a 3-inch square.
(3) The solid content of a 2-inch cube ; of a 3-inch cube.
(4) The area of one face of a 2-inch cube ; of a 3-inch cube.
(5) The area of all the faces of a 2-inch cube ; of a 3-inch cube.

Arithmetic Of Grade 6 B.

By John P. Conroy, Principal, Public School 39, New York City.

THE grade work may be divided into two parts: 1. Simple numbers with commercial applications, including the writing of checks, bills and receipts: 2. Denominate numbers with industrial applications. The work may be taken up so that one part is finished before the other is begun, or both may be taught concurrently, the latter treatment being thought preferable by some.

The matter of the grade consists of:

1. Review of 6 A as to four rules.
2. Review of four types of problems.
3. Percentage: (a) to find a number, a certain per cent. being given; (b) to find a number, the number plus or minus a certain per cent. being given.
   Commercial applications to Profit and Loss, (all cases) commission and brokerage, insurance trade discount taxes, interest (time in years and aliquot parts of year), bills, receipts, checks.
4. Denominate numbers. Reduction and four rules: square and cubic measures.
   Industrial applications; 1. Area of rectangle, parallelogram, triangle, base and altitude given, (square measure); 2. Finding capacity of rooms, tanks, etc.

1. No attempt will be made to classify the review as in the four rules, rapid and short processes, etc., as each teacher will be able to discover of what such reviews should consist. Most of the arithmetics furnish examples of the rapid and short processes that experience has proved to be of value.

2. Four types of problems. A review of all as applied to common and decimal fractions, a review of 6 A and preceding grades, which see.

3. Percentage. In this grade, percentage includes a review of cases I and II, corresponding to type problems I. and II, with their commercial applications, the work of 6 A, which see.

The advance work in percentage comprises cases III and IV, corresponding to type problems III. and IV. of previous grades, with applications as in cases I. and II.

Percentage. Case 3. Before taking up this case, review

Taxes. Paid $87.15 taxes, rate being 2.49 % (present rate); assessment?

Percentage—Case IV, (really two cases).

1. Amonnt and rate being given, to find base.
2. Difference and rate being given, to find base.

As before, previous to presentation of cases, rewiew Type Problem IV.

Examples under Case IV.

Sold a horse for $180, at a gain of 20%; find cost.

20 % = $\frac{1}{5}$. C = $\frac{5}{5}$ of itself; G = $\frac{1}{5}$ of C; S. P. = $\frac{6}{5}$ C = 180; $\frac{1}{5}$ C = $\frac{1}{6}$ of 180 = 30; $\frac{5}{5}$ C = $\frac{5}{6}$ of 180 = 150. Prove by Case I.

Sold a horse for $150, at loss of 16$\frac{2}{3}$ %; cost?

16$\frac{2}{3}$ % = $\frac{1}{6}$. C = $\frac{6}{6}$ of itself; L = $\frac{1}{6}$ of C; S. P. = $\frac{5}{6}$ of C = 150; $\frac{1}{6}$ of C = $\frac{1}{5}$ of 150 = 30; $\frac{6}{6}$ = $\frac{6}{5}$ of 150 = 180.

$\frac{6}{5}$ is 50 % more than what number? 10 % less than what?

What number increased by 100 % of itself equals 3$\frac{1}{3}$?

Sold for $2055, which was 37 % more than cost; cost and gain?

C =100 % of itself = $\frac{100}{100}$ C.

G = 37 % of cost = $\frac{37}{100}$ C.

S. P. = 137 % in cost = $\frac{137}{100}$ C = 2055.

$\frac{1}{100}$ C = $\frac{1}{137}$ of 2055; $\frac{100}{100}$ C = $\frac{100}{137}$ of 2055 = $\frac{205500}{137}$ = 1500; or $2055 ÷ 1.37 = 1500.

What diminished by 13 % of itself is 2610?

Req. No. = 100 % of itself = $\frac{100}{100}$ of itself.

Diminution = 13 % of req. no. = $\frac{13}{100}$ of req. no.

Given no. = 87 % of req. no. = $\frac{87}{100}$ of req. no.

$\frac{87}{100}$ of req. ni. = 2610; $\frac{1}{100}$ of req. ni. = $\frac{1}{87}$ of 2610;

$\frac{100}{100}$ of req. no. = $\frac{100}{87}$ of 2610 = 3000.

Or, 2610 ÷ .87 = 3000.

From formula of case I, P = B x R, device.

(1) Amt. =B x (100 + R).

(2) Diff. = B x (100-R); hence,

B = Amt.÷(1 + R); B = Diff. ÷ (1—R).

Drill on examples that give choice of method for quick solution of problem.

As before stated, oral and written examples should be given with per cents., with the fractional equivalents of which the pupils have acquaintance in review of previous cases. From examples in other cases, have pupile make examples in case IV.

Combine cases. Examples;

1. Sold two pictures for $99 each; on one gained 10 % on the other lost 10 %; gain or loss and how much?
2. Bought a pair of horses for $450, which was 25 % less than the real value, and sold for 25 % more than the real value. Gain in money, and %?
3. Sold for $125 which was 25 % below cost. What should I have received for it if it were at10 % above cost?

4. Bought goods at $3.60. At what price must they be marked that 12½ % may be deducted from the asking price, and still a profit made of 16⅔ %?

5. If a horse be sold for $220, a gain will be made of 10 %; what per cent. would be gained or lost, if it were sold for 10 % less than $220?

6. Buy at 20 % below asking price; sell at 16 % below; per cent. gained?

Give examples to be put into all the cases by the pupils. Have them think what is to be found and find it. Insist on short methods, by use of fractional expressions, for example, to facilitate solution. Reason for process should be well grounded by oral examples, numbers being so small that whole attention may practically be given to the why of the process.

Commission and Brokerage.

In case I. the teacher will make clear to pupils that broker's buying price, selling price or the amount he collects, is the base = 100 % Hence money sent him to buy with includes buying price plus his commission (100 % + R % com.), corresponding to amount in percentage. When he sells, and sends me proceeds, the proceeds equals selling price minus his commission (100 %—R % com.), corresponding to difference in percentage.

1. Sent a broker $42 to invest; com. 16⅔ %. How much does he invest? Com.? 16⅔ % = $\frac{1}{6}$. $\frac{7}{6}$ of amt. inv. = $42; amt. inv. = $\frac{6}{7}$ of 42 = 36.

2. Broker sends me $35 after deducting his commission of 16⅔ %. Selling price of goods?

3. Sent $50.92 to agent, to invest in prints at 15 cents a yard, after deducting commission of 2%. How many yords of prints should I receive, and what was his commission?

4. An agent sells goods to the amount of $4800, charging 3¼ % commission. After paying $25 charges, he invests balance, and charges 2½ % for investment. How much was invested?

5. Agent sells consignment for 2560, retains $100 to pay freight charge of $10.40 and his own commission. Rate of commission?

In first case, multiplication, in all others, division.

Interest, time in years and aliquot parts of a year. Interest to be found for one year, and then for given years and aliquot parts. $\frac{1}{12}$ $\frac{1}{6}$ $\frac{1}{4}$ $\frac{1}{3}$ $\frac{5}{12}$ $\frac{1}{2}$ $\frac{7}{12}$ $\frac{2}{3}$ $\frac{3}{4}$ $\frac{11}{12}$ are all the parts that may be taken, and exercises in rapid multiplication by these fractions will make interest easily found.

Denominate Numbers.

Integers only. Reduction and four rules; square and cubic (for purpose only of illustrating principles of numeration). The denominate numbers of preceding grades are to be fully reviewed, and examples in reduction and the four rules to precede presentation of new work of this grade. The daily work in arithmetic should be so arranged that generally the two parts of the grade arithmetic, simple and denominate numbers, will be considered in the same exercise. Or, one part may be considered on one day, and the other on the next.

The thing to be avoided is such an arrangement of grade work as would defer consideration of denominate numbers until simple numbers were finished, or vice versa. The thing to be aimed at is the concurrent study of both.

The reduction and the four rules as applied to square and cubic measures are simply to illustrate differences between numbers constructed on a system of tens, with which the pupils are well acquainted, and numbers with a changing unit, as in denominate numbers.

Square Measure.

The new denominations to be taught are the square rod, the acre, and the square mile. It is presumed that the idea of the linear and the square yard has been taught objectively, and that the pupil can measure off such a distance and surface by himself, as required in industrial applications of 6 A.

In many class rooms the teacher can place four pupils so as to form a square 16½ ft. on a side. The class may then be told that the four pupils are standing at the corners of a square rod, each side of which is a rod (long measure). While the four pupils are standing bring out distinctly the difference between a *square* and a *linear* rod. At the same time it may be shown that the space included in the square rod is not necessarily in the shape of a square, but may have varying shapes, and from the pupils examples of the varying dimensions of the rectangular figures inclosing a square rod in area may readily be obtained, and the idea of the surface firmly fixed.

To give a clear idea of an acre, a neighboring block may help the teacher. Beginning at the intersection of two streets at right angles to each other, a distance of 209 ft. on each street will give two sides of a square that will contain about an acre. The exact number of square feet in an acre may then be estimated from the table. The amount of surface in the acre being fairly comprehended, the varying dimensions of rectangular figures that contain an acre, using the rod to measure the sides of these figures, may readily be obtained from the pupils, as well as the fact that a surface in an acre may be round, triangular, or irregular in shape. The approximate area of the block on which the school stands, or neighboring blocks may then be obtained. Bring out the fact also that square measure is not used in *actual* measuring of surfaces, but to express results obtained by use of long measure. Show how impossible it would be actually to use it in measuring the area of an ordinary built-up city block, or a park with trees and irregular surface. State, too, that the acre is the unit for land; while for other surfaces the unit is usually the square yard. In a similar way some idea of the surface contained in a square mile may be obtained. Central Park, omitting lakes and reservoirs, contains about one square mile (677 Acres). Reference may be made to divisions of government land.

The applications of square measure are to find area of rectangle, and area of triangle, base and altitude being given. In 6 A the finding of the area of the rectangle was taught. In this grade the relation of the rectangle, the parallelogram and the triangle to one another is to be developed, and the rule for finding the area of the parallelogram and the triangle evolved.

Examples:

1. Bought a rectangular piece of land 165 rods long, and 140 rods wide, at $87.50 per acre. Cost?

$$\frac{165}{1} \times \frac{140}{1} \times \frac{1}{160} \times \frac{175}{2} = \text{Cost.}$$

2. Difference between 5 square rods and 5 rods square?
3. A building lot contains ¼ acre, is rectangular, and measures 45 ft. on street. Depth?
4. Area of a field is 30 acres. It is in form of parallelogram, and its length is 80 rods. How wide is it?
5. Height of a triangle containing 2250 sq. ft., base being 180 ft.?

Cubic Measure.

In this measure the foot and the yard are new, the inch having been taught in previous grades. To show relations of the inch in the linear, the square, and the cubic measure, and the relations of the foot in the same measures, the teacher should make, or better, if possible, have the pupils make, a box, 12″ x 12″ x 12″, of stiff cardboard, having each of the six faces marked by lines into 144 one inch divisions. A clear idea of a cubic foot will then be obtained. By the use of the same box the relations of the cubic foot and yard may be brought out. It may also be used to get method of finding contents of rectangular boxes etc. of varying dimensions in inches, feet, and yards, for example, in one case, by cutting the box into two equal parts, and putting the parts side by side. The rule for finding cubic contents could thus be deduced. All of this can be done better, of course, by means of cubic inch blocks used in Primary work, if sufficient number of them are obtainable.

Teach the dimensions of a cord of wood, the number of cubic inches in a bushel and a gallon. Teach that bushel is nearly 1¼ cubic feet (2150,4÷1728), hence, ⅘ of number of cubic feet is very nearly the number of bushels. Teach also that a cubic yard equals a load, and that a cubic foot of any liquid equals nearly 7½ gallons, (1728÷231).

The Arithmetic Of The 7 A Grade.

By FREEMAN H. ALLEN, State Normal School, Potsdam, N. Y.

THE topics to be considered will be *interest* (short methods), *ratio* and *proportion*.

INTEREST, SHORT METHODS.

The following problems illustrate the most desirable "short methods" in the judgment of the writer:

1. Find the interest on $327.48 for 2 yr., 9 mo., 11 da., at 4 %.

Solution.

	$327.48
	.04
Int. for 1 yr.	13.0992
" " 1 "	13.0992
" " 6 mo. (½ of 1 yr.)	6.5496
" " 3 " (½ of 6 mo.)	3.2748
" " 10 da. (1/9 of 3 mo.)	.3638
" " 1 " (1/10 of 10 da.)	.6363
Total Int. due	$36.42

2. Find the amount of $275.35 for 3 yr., 7 mo., 10 da., at 5 %.

Solution.

Principal.	$275.35
Int. for 2 yr. (10 % of Prin.)	27.535
" " 1 " (½ of 2 yr)	13.7865
" " 6 mo. (½ of 1 yr.)	6.8842
" " 1 mo. (1/6 of 6 mo.)	1.1473
" " 10 da. (⅓ of 1 mo.)	.3824
Total amount due	$325.08

When the time is less than one year the following facts are useful:

6 % for a year is 1 % for 60 days.
5 % " " 1 " 72 "
4½ % " " 1 " 80 "
4 % " " 1 " 90 " (3 mo.)
3 % " " 1 " 120 " (4 mo.)

3. Find the interest on $1,648 for 3 mo., 22 da., at $4\frac{1}{2}$ %.

Solution. Total time, 112 days.

Int. on $1,648 for 80 days..	$16.48
" " " 20 " ($\frac{1}{4}$ 80 da.)........	4.12
" " " 10 " ($\frac{1}{2}$ 20 da)........	2.06
" " " 2 " (1/5 10 da.)......	.41
Total interest due..........	$23.07

Ratio and Proportion.

Proportion is the comparison of two equal ratios, or the expressed equality of two ratios. Since proportion deals with ratios these relations should first be understood by pupils. By hastening on to problems in proportion without sufficient preparation in ratio, a teacher is quite certain to give his pupils a mere form, void of all that legitimately places this topic in the course of study.

The expression of the ratio being merely that of a fraction, or an unexecuted problem in division, of which the antecedent is the numerator or dividend, and the consequent the denominator or divisor, any changes made upon the terms of a ratio produce the same effect upon its value, as the like changes do upon the value of a fraction when made upon its corresponding terms.

The following question will indicate the kind of work to be done in ratio:

1. What is the ratio of 8 to 2? 7 to 9? 7 to 5?

2. What effect is produced upon the ratio $\frac{7}{8}$ by multiplying the antecedent by 5? by 2? The consequent by 4? by 7? Both terms by 6? Give the reason in each case.

3. Mention two numbers whose ratio is 5? 7? 8/9?

4. What number has to 6 the ratio 3? to 15 the ratio 5?

5. To what number does 20 bear the ratio 4?
" " " " 5 " " " 1?
" " " " 5 " " " 4?
" " " " 5 " " " 5?

6. What is the ratio of 2/3 to 4/5? of $1\frac{1}{2}$ to $2\frac{3}{8}$? of 5 to .05?

7. What is the ratio of 1 ft. to 1 rod? of 1 yd. to 1 in.?
" " " 2 gal. to 5 qt.? of $6 to 10 cts.?
" " " 1 lb. Av. to 1 lb. Apoth.?

8. The antecedent is 16, the ratio 2. Find the consequent.
" consequent is 6, " 5. " " antecedent.
" " 7, " 5, " " ratio.

9. Which is the greater ratio $16 : $8 or 5 lb. : 21 lb.? 3 : 4 or 1 yd. : 11/3 yd.? or 3/5 or 12 : 20? 2/3 : 5/6 or 80 %? Give the reason in each case.

10. (*a*) A walks 10 miles while B walks 11; what is the ratio of A's speed to B's? (*b*) of B's to A's?

Ans. (*a*) 10 : 11 or $\frac{10}{11}$ of B's.
(*b*) 11 : 10 or 1 1/10 times A's.

Since ratio is the quotient of one number measured by another (relative magnitude) two quantities *different in kind* can not form the terms of a ratio: and two quantities of the same kind must be expressed in a *common unit* before they can form the terms of a ratio. When two ratios are equal the four terms are said to be *in proportion* and are called *proportionals*. A proportion is written by placing the sign = or a double colon between the ratios. Thus 5 : 8 10 : 16, or 5 : 8 : : 10 : 16 means the ratio of 5 to 8 equals the ratio of 10 to 16 and is read 5 is to 8 as 10 is to 16. By expressing the ratios in the form of common fractions and multiplying both by the product of the denominators it may be shown that the product of the extremes is equal to the product of the means; *e. g.*, 5 : 8 : : 10 : 16 expressed in the form of common fractions becomes $\frac{5}{8} = \frac{10}{16}$. Now, if these equals be multiplied by the same or equal quantities the products will be equal. Multiply both fractions by the product of the denominators, 8 x 16 (in other words, *clear the fractions*), and we obtain 80 = 80, resulting from multiplying 5 x 16 and cancelling the 8's (product of the extremes), and 8 x 10 and cancelling the 16's product of the means).

The following problems indicate kinds which are useful at this stage of the work, and which serve also an opportunity for co-ordinating other topics of this grade.

1. 20 bu. of potatoes worth 40c. a bushel will pay for how many yards of cloth worth 50c. a yard?
2. 8 x 9 = 6 x how many?
3. 5 x 24 = how many x 10?
4. How many x 3 = 9 x 6?
5. 12 x how many = 8 x 9?
6. 8 x 2 ft. = how many x 8 in.?

If three terms of a proportion are given the finding of the remaining term becomes a problem similar to one of the above.

The principal arithmetical use of proportion is in the solution of problems in which there are three quantities given, two of which sustain the same ratio to each other that exists between the third and the quantity sought. In the solution of problems in proportion it is important that pupils discover the various relative magnitudes (ratios) and that they are directly or inversely equal. These may be seen in the following problems;

1. If 48 reapers cut 20 acres in a given time, how many acres will 156 reapers cut at the same rate in the same time?

Since the time element in each case is the same the number of acres will depend upon the number of reapers. An increase in one denotes a corresponding increase in the other; and a decrease in one denotes a corresponding decrease in the other; *i. e.*, the ratio of the number of reapers will equal the direct ratio of the number of acres. The former number of reapers was 48, the latter 156, hence the ratio of former to latter is 48 reapers : 156 reapers. The former number of acres was 20, the latter X, hence the ratio of former to latter is 20 A : X A. Since these ratios must be equal we have 48 reapers : 156 reapers : : 20 A : X A. A difficulty here presents itself in the solution, unless it has already received attention, because no naming can be given to the product of the means (156 reapers x 20 A). But since 48 reapers : 156 reapers = 48 : 156, the latter ratio may be substituted for the former. We then have 48 : 156 : : 20 A : X A.

Solution of the proportion: $\frac{156 \times 20\text{ A}}{48} = 65\text{ A.}$—*Ans.*

When pupils thoroughly understand this they may be taught to shorten the solution by striking out common factors from means and extremes, as follows:

$$48 : 156 :: 20\text{ A} : X\text{ A.}$$
$$X = 65$$
$$\therefore \quad 65\text{ A.—}\textit{Ans.}$$

2. If 20 reapers can cut a field in 6 days, in how many days will 30 reapers do it at the same rate?

Since the number of acres is the same in each case, the number of days will depend upon the number of reapers. An increase in one denotes a corresponding decrease in the other; and a decrease in one denotes a corresponding increase in the other; *i. e.*, the ratio of the number of reapers will equal the inverse ratio of the number of days. The former number of reapers was 20, the latter 30, hence the ratio of former to latter is 20 reapers : 30 reapers. The former number of days was 6, the latter X, hence the ratio of former to latter is 6 days to X days. Since the former must be equal to the latter inversely, we have

20 reapers : 30 reapers : : X days : 6 days.

Solution:

$$20 : 30 :: X : 6$$
$$X = 4$$
$$\therefore 4\text{ days.—}\textit{Ans.}$$

It may be seriously questioned whether proportion deserves or will long retain its place in the course in our secondary schools. As a disciplinary exercise it is too often a failure because the form alone is mastered. From the standpoint of practical utility it certainly is equaled by the *unitary analysis*. Particularly is this true of problems in Compound Proportion. The following will illustrate the advantage of the

UNITARY ANALYSIS.

1. If 50 men do a piece of work in 90 days, working 8 hours a day, in how many days will 72 men do it, working 6 hours a day?

Analysis :—

If 50 men working 8 hours require 90 days,
1 man " 8 " will require 50 x 90 days,
1 " " 1 hour " " 8 x 50 x 90 days,
72 men " 1 " " " 1/72 as many days, or

$$\frac{8 \text{ x } 50 \text{ x } 90 \text{ days.}}{72}$$

72 men working 6 hours will require 1/6 as many days, or

$$\frac{8 \text{ x } 50 \text{ x } 90 \text{ days.}}{6 \text{ x } 72}$$

Cancelling,

$$\frac{8 \text{ x } 50 \text{ x } 90}{6 \text{ x } 72} = \frac{250}{3} = 83\ 1/3\ \therefore\ 83\ 1/3 \text{ days.}$$

The idea involved in the unitary analysis is readily seen in the following form :

Facts given, 50 men, 8 hours,—90 days.
Reduce to unity, 1 man, 1 hour,—? days ?
Required, 72 men, 6 hours,—? days ?

Solution :—When the analysis is mastered, the last step is the only one that need be used in the solution, *ergo :*

$$\frac{8 \text{ x } 50 \text{ x } 90}{6 \text{ x } 72} \text{ days} = 83\ 1/3 \text{ days.}$$

2. If 10 men set the type for a book of 15 sheets, folded so as to make 32 pages per sheet, each page containing 40 lines of 50 letters each, in 9 days, working 8 hours a day, how many days will be required for 6 men, working 10 hours a day, to set the type for a book composed of 20 sheets, folded to make 24 pages per sheet, if each page contains 50 lines with 40 letters to the line ?

Suggestion of analysis :

Facts given, 10 men, 15 sheets, 32 pages, 40 letters, 8 hours—9 days.

Reduce to unity, 1 man, 1 sheet, 1 page. 1 letter, 1 hour—? days ?

Statement thus far $\frac{8 \text{ x } 10 \text{ x } 9 \text{ days.}}{50 \text{ x } 40 \text{ x } 32 \text{ x } 15}$

Required, 6 men, 20 sheets, 24 pages, 50 lines, 40 letters, 10 hours,—? days ?

Statement completed

$$\frac{40 \text{ x } 50 \text{ x } 24 \text{ x } 20 \text{ x } 8 \text{ x } 10 \text{ x } 9}{10 \text{ x } 6 \text{ x } 50 \text{ x } 40 \text{ x } 32 \text{ x } 15} \text{ da.} = 12 \text{ da.—}\textit{Ans.}$$

Arithmetic In Grade 7 B.

By DAVID EUGENE SMITH,
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This paper will be confined chiefly to certain topics which are more or less new to the class.

THE METRIC SYSTEM.

THE reason for teaching the metric system in the schools of New York to-day is the first thing to be considered by the teacher. There seem to be three well defined and sufficient reasons for teaching the system. First, it is now used in all the laboratories of the country. Twenty-five years ago we used the Troy weight in scientific work; now it is always the metric system. The pupil is therefore soon to need it in his class work. Second, it is now required as part of the stock of general information. Newspapers no longer think it necessary to translate from the metric system to our own in speaking of foreign measurements. Third, although of less immediate importance, it is necessary that we should teach the rising generation the fact that our own poor, cumbersome, inherited system is so wasteful of energy as to make a radical improvement desirable. With these reasons before us, the method of teaching the system becomes clear.

Since it is to be used in a practical way in the laboratories, the system must be known *by itself.* As far as possible the pupil must think in the metric measures, just as he is brought up to estimate in feet, pounds and quarts. To this end the actual measures should be used in a practical way, handled by the pupils, kept in sight,—made real. Cases of metric measures should be placed in the school rooms where they would always be in sight of the children. Hence, the first suggestion in method is this, *make the system real by the frequent and exclusive use of the actual measures.*

There are certain metric names that are rarely used, as the hektometer, dekagram, etc. *The pupil should be exercised chiefly from the more common measures*, especially the liter, gram, kilogram, milligram, meter, kilometer and millimeter.

Since the names look strange and difficult to a child, this difficulty should be removed by such simple mnemonics as will readily occur to the teacher. For example, hold a meter stick before the class and call attention to the fact that a gas meter measures gas and a water meter measures water, and ask what the word *meter* probably means. Having established this bit of etymology, ask how many mills in a dollar; then how many *milli*-meters (point to the division on the stick) there are in a meter. Similarly, i millimeter is the thousandth of a meter as a mill is the thousand of a dollar, ask what the hundredth part of a dollar is called, a therefore what the hundredth of a meter should be named. Sim larly, *deci* suggests the decimal point which comes just befo *tenths; deka* suggests *dekagram*, a *ten*-sided figure; *hekto* an *hundred* both begin with *h*; *myria* suggests *myriad*, a very larg number, myria representing a larger number than any other prefi (10,000); *kilo* comes between hekto and myria as *k* comes between and *m*. Simple as these mnemonics may appear, they often smoot a rough path and lead the beginner to see that the strange wor are mostly old ones in new forms.

The pupil should then be drilled upon the translations bac and forth in the following table:

myria,	10,000
kilo,	1,000
hekto,	100
deka	10
unit	1
deci	0.1
centi	0.01
milli	0.001

Then, by inserting the unit (meter, gram, or liter), the three tabl are at hand. It does little good to run through the tables, sayi "Ten millimeters make one centimeter, ten centimeters make o decimeter," etc. The ability to tell at once and with certain what *deci* means, what the prefix for 1000 is, etc.,—these are t important matters in learning the tables.

While in science the metric system is used by itself—that not in connection with the common system—something more required for general information. Here we need to know a f equivalents, viz., 1 liter nearly 1 qt., 1 kilogram = 2.2 lbs., meter = 39.37 in., nearly a yard and 3 inches; 1 kilometer nearly 0.6 of a mile. In reading it is often necessary to mak translation in order to picture the measure more easily. Th 10 kg. does not mean so much to us as 22 lbs., nor 50 km. as mi. The above are, however, about all the equivalents that necessary, and to add others is merely to make the work tedio

If any are added, the fact that the middle finger is about 1 d long, and the fingernail about 1 cm., may be included. It may of assistance to know that there are no well recognized abbrev tions for the metric system. Even in France we find square met abbreviated in at least three ways, qm., m^2, □ m. The plan writing dekameter *Dm.*, and decimeter *dm.*, has never been gen ally accepted, because the dekameter is never used in practi

Much of the value of the study of the system at this time will be lost if the practical application is not found in the work in Physics. The work for this term includes the study of forces, gravity, heat, sound, etc., offering abundant opportunity for correlating the arithmetic and science. The study of commercial geography, as outlined in the course of study, also offers opportunity for emphasizing the importance of a system so widely used in the commercial life of to-day. In the course in history the pupils have become familiar with the outline of French history, and reference to the metric system as one of the results of the revolution will add interest to both subjects. Indeed, since the system is beginning to affect our exported machinery, there is a practical as well as a theoretical reason for using it in the manual training work of the year.

EXCHANGE.

Any one who has studied the history of arithmetic—and every teacher of the subject should do so—is aware of the reason for the presence of much that is obsolete. Such subjects as alligation, equation of payments, true discount, troy weight, etc., are not necessarily obsolete, but are certainly quite out of place in our common text-books. Among the mass of obsolete problems, many are still found under Exchange.

A man in Syracuse now pays a debt in Albany in one of the following ways:

1. He sends a New York sight bank draft. He might get a mercantile draft, possibly one payable thirty days after sight, but he does not; the custom is extinct.
2. Or he sends his check on a Syracuse bank.
3. Or he gets a postal, or an express company's money order.
4. Or he sends it through a telegraph company.
5. Or he sends the money directly, by express, by registered letter, unregistered, or through some other agency.

The ordinary citizen needs to know the relative advantages of these processes, and he needs to solve a number of problems of a practical nature so as to fix all this in his mind. He has then mastered all of exchange that he will ordinarily need.

Before leaving the subject he should also know, as a part of his stock of general information, and as something which he will meet in business, that there has arisen a method of collecting money by drafts. A merchant has $50 owing him in Syracuse, and he has written for it without avail. He may then say, "If this isn't paid this week I shall draw upon you." He may then make a draft, addressed to the debtor, and may give it to the bank where he keeps his account for collection. This bank sends it to some bank in Syracuse, and that bank sends a messenger to the debtor and demands the money.

Hence the pupil needs to learn of two kinds of drafts in common use in the country—the bank draft for payment of money, and the private draft for the collection of money. If he is going into the banking business, or into a broker's office, or into the counting room of a large mercantile house, he will learn of other matters of exchange, but all these form part of his technical education, not of the education which the schools are called upon to give.

With this view of the subject in mind, the teacher should secure specimens of checks, money orders, drafts, etc., so as to have the forms well understood. Many arithmetics now print these forms, and this answers the purpose.

Problems in the text book—which do not come within the field above set forth may safely be neglected. If foreign exchange is taken up it may advantageously draw upon the commercial geography of the year for a few practical problems. But the teacher should remember that debts the world over may now be paid in London exchange, and that with the exception of English, French and German drafts, it is not worth while to consider foreign exchange at any length. He should also remember that the old custom of having drafts made out in sets of three is disappearing with the advent of postal and express company money orders, and that bankers generally use only two at present.

PROPORTION.

This subject is begun in Grade 7 A, and is continued throughout the year. A few suggestions concerning it may not, therefore, be out of place.

Now, where is proportion used? Certainly not in problems about 10 men mowing a field in 24 days, working 6 hours a day, because we now use a mowing machine and 6 hours do not constitute a day's work. Indeed, it would be exceedingly difficult to find more than a half dozen proportion problems in most text-books that are at all usable in the life of to-day. But there are two lines of elementary work where proportion is vitally important—in mensuration involving similar figures, and in physics. Problems like the following illustrate the case of similar figures: If a sphere of metal 1 in. in diameter weighs 8 oz., what will be the weight of a sphere of the same metal 2 in. in diameter? If a 6 in. pipe carries 30 gals. of water per minute at a given velocity, what would a 3 in. pipe carry under the same conditions? If an upright cane 42 in. long casts a shadow 30 in. long, what is the height of a tower in the vicinity which casts a shadow 91 ft. long at the same time?

Problems in physics are numerous. The velocity and intensity of sound and light, considered in this grade, furnish numerous examples. Simple machines also studied in this grade involve the law of levers, a law which uses proportion in its statement.

Hence we may say, in general, that most of the text-book probıs in proportion are of little practical value, but that the work of grade in mensuration and in physics offers abundant material exercise.

But the teacher may inquire, How shall we explain proportion? hile several of our latest text-books answer this question, a few gestions may not be out of place.

First, a proportion is nothing in form but a simple equation olving fractions.

When we write $\frac{x}{4} = \frac{5}{10}$ we write a proportion.

The fact that it contains x need not worry a teacher, for few lay would think of carrying a class through arithmetic without ng this mathematical symbol. The child solves a simple equaı in the first year when he finds the (?) in the statement (?) = 6. Hence there need be no fear of difficulty in introducing portion through the form $x = \frac{5}{10}$.

Again, it is better to use this form than the inverse one, $\frac{10}{5} = \frac{4}{x}$, h x in the last term. For while this is the traditional one, the er gives the value of x at once by a single multiplication, *i. e.*, nultiplying by 4.

It is better, too, to use the form of common fractions at first, so o introduce as few novelties as possible until the mathematical ı is fixed. Later, because he will need it in his reading of physics algebra, the pupil should be taught the form $x : 4 = 5 : 10$, and a the semi-obsolete form $x : 4 :: 5 : 10$.

Before taking up the applications of proportion, the idea of o must be taught, *e. g.*, what is the ratio of the volumes of two es whose edges are 1 in. and 2 in. respectively? What is the o of the areas of two circles whose radii are 2 in. and 3 in. ectively? From such problems these laws should be derived. imilar figures:

1. Corresponding lines have the same ratio.
2. Corresponding areas have the ratio of the squares of corresding dimensions.
3. Corresponding volumes have the ratio of the cubes of esponding dimensions.

An early problem in proportion may then be one of this nature: cube of wood 2 in. high weighs 2 oz., what is the weight of a of the same wood 3 in. high?

1. Let x = the number of ounces.
2. Then x = the ratio of weights, and $\frac{3}{2}$ = the ratio of heights.
3. But since the volumes (and hence the weights) vary as the s of corresponding dimensions, we have the proportion $\frac{x}{2} = \frac{27}{8}$.
4. Multiplying by 2, $x = \frac{54}{16}$, the number of ounces.

Here no arbitrary rule has been assumed. Indeed, the pupil may well be encouraged to take the proportions $\frac{2}{x} = \frac{8}{27}$, $\frac{27}{8} = \frac{x}{2}$, $\frac{8}{27} = \frac{2}{x}$, solving each by his common sense.

PERCENTAGE.

Although the pupils have been studying this subject more or less for two years, a few words concerning it may not be out of place at this time.

At the present time, when the simple equation is coming to be generally recognized in America as a part of elementary arithmetic, there is no reason why percentage should remain at all mysterious or difficult. If a pupil can wander through the mechanical and unreal process of letting 100 equal the number sought, it must certainly be an easy matter to let x or n equal the number. Indeed, probably no teacher ever tried the simple equation in percentage and thereafter discontinued its use.

For example, What number is that which being increased by 4 of itself equals 416?

Let $x =$ the number.
Then $x + 0.04x$, or $1.04x$, equals 416.
Dividing these equals by 1.04, $x = 400$.

Here there are no rules, no "cases," no formulæ, and no letting 1 equal the number, with the absurdity that $1 = 400$. This simple process is applicable to all classes of problems, and there is the added advantage that when the pupil reaches algebra he meets a subject for which he has had considerable preparation.

A few words, too, upon the subject of the terms and symbols of percentage may be of service. In the days of "cases" and rules it became necessary to designate the numbers in some way which should make the rules intelligible. Hence arose the terms *base*, *rate*, *percentage*, *amount*, *difference*. Of these five, but one or two are recognized in business—*rate* and, possibly, *amount*. The business man speaks of a rate of insurance, of taxation, of interest, of discount,—the first two, however, with a different meaning from that usually assigned in arithmetic. He also speaks of the amount of a note. But he never speaks of *base*, or of *percentage*, or of *difference*, as we use these terms in this subject. Hence it is to be hoped that teachers will discourage their use, their only value to-day lying in the possibility of some antiquated question getting into some ill-considered examination paper.

Arithmetic In Grade 7 B.

By Albert Shiels, Principal, Public School 125, New York City.

A COMPARISON of the arithmetic of classes 7 A and 7 B will show apparently very little difference, and if we except the metric system and the mensuration of circles, cubes, and prisms, nothing absolutely new. Any attempt to make a clear cut line of demarcation between the two grades would seem to defeat the object of the framers of the Course and to deny to the teachers of advanced classes a certain liberty of action and application.

But all successful teaching must have a definite conception of such limitations and details of the subject as it proposes to consider; the apparent vagueness of the Course in Arithmetic therefore aims really at a greater degree of definiteness, it seeks principally a careful articulation of the work of the various grades, leaving the precise ground to be covered by each to the local conditions and circumstances of the individual schools. To attempt to lay out in detail, the path that every class must follow would be to usurp—and always unsuccessfully—a place that the principal and teacher alone can fill. To afford some suggestive thought is the best that articles of this character may hope to accomplish.

Denominate Numbers; Tables previously given; comparative tables of units.

A review of the tables not by repetition of their tabular form but by mental examples involving rapid reductions. The tables required are only those necessary for every day knowledge, not those peculiar, to special pursuits (as surveyor's measure) and as the pupils of this class are already reasonably proficient, the examples should, as far as possible, be concrete, and adapted to give them a ready ability in estimating distances, surfaces, and content.

Denominate numbers then must be taught *practically* and as is the case with all subjects where a review is sought, in correlation with other topics and subjects of the grade.

I have found it very valuable to attach to a shelf, especially

arranged for the purpose, a number of paper square prisms
bulk will equal the volumes of the various dry and liquid un
these are in each room the child will insensibly form an im
more valuable than any bare formula can give. Each pupil n
an exercise in constructive work, be given a prism to mak
when completed the denomination and name of the maker
be printed in large characters. Though the dimensions o
paper prisms will readily suggest themselves, some ar
appended.

The Gallon,	6″ x 6″ x 6½″
Quart,	3″ x 3″ x 6½″
Pint,	3″ x 3″ x 3¼″
Gill,	1½″ x 1½″ x 3¼″
Bushel,	12″ x 12″ x 15″
Half "	6″ x 12″ x 15″
Peck,	6″ x 6″ x 15″
Small measure,	3″ x 3″ x 15″
Quart,	3″ x 3″ x 7½″
Pint,	3″ x 3″ x 3¼″

Different colored paper for the Liquid, Dry, and Metric
suggested.

Relation of Numbers (concretely illustrated) — Ora
written.

I.—Simple Numbers : Integers, fractions, mixed number

1.) Four rules, rapid and short processes.

These processes had better be taught as separate drills
than incidentally as they may occur in given problems.
manual directs them for preceding grades, it may be as
that the usual forms of rapid operations have been already t
Mental work affords a ready field for their application,
problems should as far as possible be "mental," *i. e.*, they
contain a minimum of written work. In addition, two an
three figures may be taken as single groups : in multiplicati
use of aliquot parts, when shorter, should be required, as in
plying by 12½, 25, 33⅓, etc. The 0 should be omitted when p
and "cross multiplication" should always be applied when t
tors do not contain more than two places. Pupils should w
short division where the divisor does not exceed 15, or wher
are such multiples of ten that by dropping the 0's they may
than 15. Aliquot parts should also be used in division ;
dividing by 25, we multiply by 4 and move the decimal
places to the left, thus 38.5÷25=1.540 (38.5 x 4÷100)

or

37.5÷3⅓=11.25 (37.5 x 3÷10)

Not only should short processes be followed, but the
should learn to rely on his own memory for figures he is accus
to put on paper. Thus in compound interest the multiplie

not be written ; *e.g.*, in finding the compound interest on $680 for 3 ears @ 5%, the example should be written as shown on the right

$680.	680.
.05	34. 1st year's interest
34. 1st year's interest	714.
680.	35.70 2d " "
$714.	749.70
05.	37.485 3d " "
35.70 2d " "	787.185
714.	680.
749.70	107.185 Total interest.
.05	
37.485 3d " "	
749.70	
787.185	
680.	
107.185 Total interest.	

When new matter is being taught no attempt should be made require the pupil to use short or rapid processes with which he not already well acquainted, as it would confuse him and so prent that concentration of mind on the new subject which is the cessary condition for easy and thorough apprehension.

2.) *Four types of problems.*

The consideration of these will find ready application under rcentage and its commercial applications.

3.) *Percentage*

Will be taken under II, or commercial application of perntage.

4.) *Proportion.*

Although this is taught in the 7 A class, the teacher of 7 B ass must learn how far the meaning of the terms has been appreended : every intelligent teacher knows how frequently a subject nce taught and seemingly learned, seems after some intervening eriod of time to be but vaguely remembered.

It is a truism that the difficulty for the learner is to really nderstand the nature of ratio, that the unit is not a quantity but a lation between quantities, and that the value of the latter may be multaneously changed without any change in the unit of ratio : the upil should know, too, precisely why the ratio 3 : 4 may be written the fractional form $\frac{3}{4}$.

The best method of finding the unknown quantity is, I think, to put it in the fourth term as it requires in every case reasoning by the pupil. Since he must know in each example whether the fourth term should be greater or less than the third the problems can never become mere thoughtless repetitions of formula. In simple proportion it is well to require an approximate answer before any work is done, a device equally valuable in the commercial applications of Percentage, especially Interest.

Compound proportion is not a new subject, and if simple proportion has been well learned it should present very little difficulty.

As proportion deals with almost as wide a territory as fractions; it may be correlated not only with other topics of Arithmetic, but with other subjects of the grade. The use of aliquot parts already referred to is a kind of proportion, and a 7 B grade boy should learn to answer mentally such questions as, "If 4 cubic feet of water contain 250 lbs, how many cubic feet in 1,000 lbs?" as the ratio of 250 to 1,000, *i.e.* 1:4, should be readily perceived.

In mensuration the child finds new applications and new ratios: thus he learns to discover comparative shadows of objects; he finds that when the dimensions of two rectangular surfaces are multiplied by the same number, the areas vary as the square of that number, and the dimensions of two square prisms are similarly multiplied the contents vary as the cube of the multiplier.

We may correlate with our geography and history by comparing the relative area, population, military power or wealth of two countries, using the familiar device of drawing comparative images, squares, men, guns or barrels, these always to be done by the pupil.

Problems in interest may be calculated proportionately, and the nature of interest being understood, partnership may then be taught. In applying proportions to partnership, we must note that the Course of Study mentions neither this subject nor the averaging of accounts. The latter may be abandoned therefore and only the elementary principles of the former need be taught.

Finally the pupil should learn to divide concrete quantities into groups according to their numerical relations. For example: The combined population of the earth is estimated at fifteen hundred millions, and it may be divided into Christians, Buddhists, Mohammedans, Brahmanists, Jews, and miscellaneous religions in the ratio of 200, 250, 100, 75, 4 and 141. How many are Christians? or, in a class of hygiene: "The bones contain in 100 parts, of water 14 parts, of other mineral matter 70 parts, and the rest organic matter. An analysis of bones showed 200 ounces of organic matter. How many pounds (or kilogrammes) of bones were analyzed?"

Such examples should relate to actually existing conditions of interest to the pupil or of value to the other grade work. They may not be found in arithmetics and their preparation requires much labor, but they give to the pupil a consciousness of strength in aling with matters which, besides quantitative relations, have a gnity of their own.

5.) *Square Root.*

The mere learning of the process of square root is not very diffi- lt, but the reasons of the steps are frequently not obvious to the pil. The usual arithmetical process is condensed and it would be ell to learn the longer process from which it is derived.

Although many teachers use the algebraic formula, I have und the graphic representation of the square preferable.

Let the child first construct, at the blackboard, squares on given ges, as 29 inches or 329 millimeters and learn to build the squares d rectangles of the units, tens or hundreds, till he has learned at any root of n places will make a square containing n smaller uares and n—1 pairs of rectangles.

It is assumed that the pupil has learned in 7 A that the squares units give 1 or 2 places ; of tens, 3 or 4 places, etc

We may now make on a large sheet a square containing 56169 mm.—a number composed of 50000 + 6100 + 69 or 3 squares :

We take the root of 50000 sq. mm. or the large square which is mm. and enter it, and thus find the square to contain 40000 sq. n. which re-enter in square "a" and deduct from the total. But e number 200 gives a clue to the rectangles bb' which may be nsidered one rectangle, of these dimensions, 400 mm. x ? mm. nce 16196 sq. mm. is the total of what is left we may divide 16196 400 giving 40. The pupil must always "try" this required side the rectangle to see if the remainder will at least hold the square " between the rectangles. Thus 40 x 400 = 16000, 16196—16000= 6 but if the short edge of b is 40, d must equal 40^2 or 1600. There- e 40 is too great and the next lower ten, 30, is tried.

$$\begin{array}{r} 30 \times 400 = 12000 \\ 30^2 = 900 \\ \hline 12900 \end{array}$$

sq. mm.

Since 16196 sq. mm. contains b & b', c & c', d & e, by deducting 00 sq. mm. we have 3296 sq. mm. = c & c', d & e. As before we a clue to the rectangles c + c' each of the long sides of which is mm. or placed endwise a rectangle 460 mm. long. Dividing as ore we get 7 for the short side which being "tried" and found rect gives 3220 sq. mm. for the rectangles c & c' ; the squares of short side 7 = 49 sq. mm. which exactly diminishes the

The pupil's paper would appear thus

400)16169(40
16000
169
but 169(40^2 : we try 30
400 x 30 = 12000 sq. mm. area b b'
$30^2 =$ 900 " " d
12900
230 x 2 = 460
460)3269(7
3220
49-49
49 – 7^2

56169 (200 mm. edge of ▫ a
40000 = area of □ a
16169 = area of b, b', c, c', d, e
12900 area of b, b', d
3269 area of c, c', e
3220 area of c, c'

Subsequently the pupil may use the usual condensed method but not till he has learned the reason of the various steps.

The square root of fractions and decimals present no unusual difficulty and the applications will be found in discussing Industrial work.

6). *Cubes.*

To be discussed under the next heading.

II.—*Business Applications, Oral and written.*

All work under this section must be preceded by concrete examples, and the general rules and formulæ must be very slowly derived, and only after *much* constructive work by the pupil himself. The hour devoted to workshop and mechanical drawing can prove of material aid and economize much time.

If not always, problems should, at first, be accompanied by diagrams, and the latter should be neither slovenly nor deceptive, *i.e.* the proportions of their parts when drawn should have approximately the same ratios as do the given dimensions; thus in representing a rectangle the given dimensions of which are as 1:10, the pupil should not make a diagram of one with sides 1:2.

As the object is to teach such business applications as ordinarily occur to the mechanic and tradesman, we should try to work on the paths they usually travel. Therefore it would be well to make the examples practical and tending to intelligently correlate with other arithmetical topics. Thus we may give metric measurements. In asking for the area, give one side only and its ratio to the other: care must be taken to correlate other matter only when it is familiar to the worker.

Capacity, Cubes, Prisms.

The consideration of the cube involves its edge surface and contents. The first and second are already known to the child. The cube like other units is fundamental; the statement, Content = Length x Breadth x Thickness is not only barborous but untrue.

The cube is principally of importance as a unit in measuring capacity, q.v. In considering the cube alone the pupil is required to show in connection with the tables its value as a unit whether foot or metre. In science work he is reminded of the distinction between volume and weight, and the constant relation of the cube to the former and its varying relation to the latter. He learns thus to distinguish Volume, Mass, and Density.

Prisms: The pupil should be able to name the various forms but he need learn to estimate only the volumes of square and triangular prisms. The knowledge acquired of the comparative sizes of triangles and rectangles of the same base and attitude will show the relations of the two solids.

In applying the study of right angles the pupil may be required to calculate the length of the surface diagonals both of cubes and prisms. A more difficult question would be to ask for the longest diagonal. In showing what is required we may use a hollow prism like a chalk box and run a transverse cord through it.

Capacity: In finding the capacity of bins or other receptacles it is customary to begin by requiring the contents in cubic units the three dimensions being given, and then to require them in gallons or bushels. A glance at the course shows that pupils must be already familiar with these steps, and the introduction of metric units would therefore be desirable by continuing to impress the operation on the pupil's mind and yet affording variety. Familiar examples in Science may be correlated with those of capacity, and pupils should be required to make approximate visual calculations of a barrel, of the room, hall, and yard. In reducing to bushels the equivalent 2150.4 is better than 2150. or 2150.42 for its convenience as a ready multiple.

The calculation of cylindrical tanks presents no new difficulty and affords an excellent opportunity for review of the circle. Though the course does not so direct, the pupil might well be required to find the area of the cylinder by developing a paper pattern.

Notwithstanding the apparent simplicity of finding the capacity, children are always "slipping up" on it. The majority of a class which could find the gallons and bushels in any receptacle was unable to answer the question "How much air enters a school room through a register 4' x 4' in an hour if its velocity is 100 ft. per minute?" The class in question was composed of teachers. The lesson is to infuse so much variety, to get away so far from stereotyped form of questions as to lead the pupil to recognize the same fact no matter from what point of view. Arithmetics will not do it; it requires the personal effort and ingenuity of the teacher.

Business Applications.—Commercial.

It was formerly customary to treat Percentage and its subdivisions as entirely new and separate subjects: the arrangement of the manual suggests a different, and what is generally admitted to be a more intelligent, method of procedure: nevertheless such subdivisions as Commission,—Insurance, Bank Discount, cannot be taught casually: their terms must be understood and the conditions they represent must be taught and the manual gives no definite instruction as to which particular topics are to be considered. "Business Forms" would indicate an acquaintance with the transactions they imply, and thus we may reasonably make the following conclusions.

First: To give the learner a clear knowledge of percentage and its cases and a ready *ability* to reckon in them.

Second: To apply this knowledge to the various subdivisions directly, not treating them as new subjects but simply showing the relations of the names, (as Base = Cost = Face of Policy, etc.)

Third: To consider such subdivisions or applications as are customary among all men of business as Profit, Loss and Insurance

Fourth: To avoid such applications as are peculiar to specia pursuits, and a knowledge of which is not necessary excepting for those engaged in them (as Brokerage).

Fifth: To avoid unusual or improbable examples or those which may have a legal but not a commercial sanction, (as the "Amount" in Commission or the U. S. rule of Partial Payments.

The subsequent paragraphs are an attempt to realize these conclusions.

The newer arithmetics point out that if the relations of the terms of percentage are well understood their subsequent application under different names may be easily apperceived. These time honored names Base, Rate, Percentage, Amount, Difference, have been dispensed with by excellent teachers, and when they have been used like algebraic terms so as to memorize formulæ, wisely so.

But for myself I have found it an economy of time to follow even in 7 B the method outlined below and I think if it were introduced in a 5 B and carried throughout, the experiment would prove satisfactory.

The nature of percentage having been explained, and frequen exercises, principally oral, having been given in the various "cases' the pupil becomes acquainted with the names and relations of th five terms, the names being written in this order:

Base.
Rate.
Percentage.
Amount.
Difference.

Frequent and thorough drill; especially by oral problems, ar given to the pupil until as one boy expressed it "I know 'em backwards with my eyes shut." Numbers are read and their equivalent pointed at the board, engaging the auditory and visual attention o olar, the last name pointed out being the one for which an is required. Thus: "Base 60, Rate 2%, Amount ?" There t danger of assuming that these exercises are understood they are fully mastered. The exercises in arithmetics are luable. There should be exercises in transposition as, "16 what?" "Ans. 160." "Express in Percentage." "Ans. The tage is 16, the rate 10%. What is the Base?" Similarly 300 ore than what. There need be no analysis and nothing but plest fractions or decimals. "One thing at a time" is a good re.

e caution must be repeated. Go slowly and be sure that these nd the relations are as truly the possession of your pupils as e your own. When they have been learned we are ready to the most familiar and simple application—Profit.

e pupils are not necessarily aware that you are taking a fortep: few are ignorant of the implication of profit and loss many are thoughtless as when they subtract the loss from ing price to find the cost.

ving given a number of simple examples in Profit and Loss to those given in percentage we may now ask the pupil to se: thus "Amount $2.20, Rate 10%, what is base?" "Trans- Profit or Loss." "Ans. I sold cloth for $2.20 gaining 10% ost. What did I pay for it." I have given two or three es where there should be as many hundred, short and varied d with that nice increase in complexity by which the pupil sibly led to perform more difficult feats with increasing con- When they can be readily transposed and referred to his dge of the percental terms he is ready to proceed. Each should become shorter, if familiarity with the necessary on allows him to concentrate his attention on the new term s is not a difficult task. He is learning new matters in terms ld "an easy and thorough apperception."*

itting for the present trade discount we proceed to Commis- oting only the ordinary case where there is a Base Per- and Difference. There is a tendency to use type examples ere should be as much variety as possible. Not only sions on the sale and purchase of goods, but on the on of debts, the letting of houses and other similar examples be introduced. There is little gain in memorizing such as Net Proceeds or Gross Proceeds if other terms of the own invention appeal more vividly to him. Some inter- explanations of business conditions will precede the examples, pupil must be constantly drilled into *seeing* the new mat- erms of the old. The use of the Amount should be omitted, ause it is difficult, but because it is unusual.

e class should further learn the terms and conditions of the

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following applications of Percentage; Custom House Duties, Taxes and Insurance. All of these lend themselves to examples in commission, and include subjects which should be understood by men engaged in any business whatever.

The members of the class are expected to prepare a chart in which they will enter from time to time the equivalent values of the five Percentage terms, not by dictation but as a result of their own knowledge.

I subjoin a copy of a pupil's chart:

Percentage	Profit,	Loss,	Com'n,	Ins.,	Taxes,	Duties.
B.	Cost	Cost	Services	Policy	Ass'd value	Invoice
R.	R. P.	R. L.	R. C.	R. I.	R. T.	Rate
P.	Prof.	Loss	Com'n	Premium	Taxes	Duty
A.	S. P.	——	——	——	——	Total cost to import
D.	——	S. P.	Customer's share	Company's Loss	——	——

In Taxes the pupil should learn to quote cents and mills on the dollar; in Insurance, the premium per thousand dollars.

As each new subject is taken up the others are reviewed by giving the Percentage equivalents of the new terms and requiring their translation in terms of subjects already learned. Thus "Amount = $120. Rate 8%. Find base. Express in Customs." Ans. "It costs me $120 here for a bill of goods imported from Canada: the duty being 8%, what are they worth in that country?" Express in Profit. Ans. "Sold goods for $120, gaining 8%, what was the cost?" "Express in Insurance." Ans. "No such case in insurance."

Another step requires the pupil to pass from one application of percentage directly to another framing a problem which will require the same arithmetical operations.

Stocks, Bonds and Brokerage.

In a community like ours the pupil should know the distinction between stocks and bonds, the necessity of stock companies, the method of the stockholders' control, the meaning of Dividend, Surplus, Par and Market values, and the function of brokers and a stock exchange. Such examples as will aid to this knowledge are of a very simple character. But the knowledge that brokerage is charged on the par and not the market value is a matter of detail, interesting only to the speculator and investor and is not, I think, worthy of attention in the elementary school. Investments and Income are applications of Interest q.v.

While, therefore the *meaning* of all the terms in the foregoing paragraph should be understood, it seems to me that a detailed consideration of stock speculation is out of place.

Trade Discount.

It will be observed that True Discount is not mentioned in the Course of Study. Though it is but interest under another name, it may well be wholly omitted, as it is practically unknown in business as a method of calculating discount. There are two commercial applications of Discount; one in which the actual rate is given and the other in which the annual rate is given, and the learner is compelled to find the discount for the given time; the most familiar application of the latter is the one known as Bank Discount.

The former is a simple case of Percentage in which the Base is variously known as the Long Price, List Price, Marked or Asking Price. The usual reductions to jobbers and retailers and the reduced sales advertised in the newspapers, are examples of these. The attention of the class is also called to the usual invoices of goods where for long term sales discounts are given for ten days or cash payments, the rate of discount being actually given on the bill.

Bank Discount is a case quite as specialized as the measurements of masonry or wall paper: it is doubtful if more than 10% of our graduates will ever avail themselves of bank accommodation: further, it will be readily learned by a pupil understanding interest when the occasion may arise for using it.

Bank discount is of course an inaccurate interest reckoned on an amount greater than has been actually lent to the debtor, but this inaccuracy is condoned because of the greater ease of operation (multiplication being preferred to division) and the comparatively small difference in the actual result. It will be of decidedly great help to associate the terms Base, Percentage, and Difference respectively with the face of the note (or its matured value if it carries interest) Bank Discount and Cash advanced by the bank. The derived cases of Bank Discount should be simple; loans should not exceed 90 days or 3 months, as this is the usual maximum in these transactions; where months are given the scholar should learn to calculate the exact number of days mentally and in all written examples he should frequently be required to give an approximate answer by inspection.

Exchange.

The problem of exchange is to make payments in some other place for cash or goods delivered here: the payment is forced when a dealer "draws" on a dilatory customer, but this case had best be left as one of the last processes after the more ordinary conditions are understood.

Generally it is the local merchant who seeks to pay money in another locality, and this leads to the inquiry as to how such payments may be made: such an inquiry should always be concrete and it will elicit various answers, such as by post-office, express, or telegraph order. The advantages and disadvantages of these, their safety and speed, their expense and non-negotiability, will lead to other suggestions by the class. Some will suggest actual delivery of cash by mail or express, but these also have disadvantages, the one of insecurity (even when registered), the other of expense. As the pupil has already learned the use of the check, some may suggest this: they have forgotten that the check is payable here.

It will be observed, however, that the check is really a loca draft, the name of the drawee being at the top and not at the lowe left corner; by making the necessary change of form the notion o the draft may be easily developed, the drawee whether individua or bank being in another locality.

Even for a graduating class I have found concrete presentation desirable. A corner of the room is in imagination another city Four or five pupils make up its commercial population and one i the drawee. A pupil at the front is the local banker and correspondent of the drawee. One near him desires to travel (to the corne and asks the front pupil for a draft for $a. The latter steps to th board and reckons the cost, using such colloquial language as " charge on every $1 of draft a premium of $ .003 or a total of $1.00 and therefore on $a. the product of $a x 1.003." Paper money fo this amount is given him and he gives a regularly written draft t the buyer or payee who goes to the back and actually exchanges hi draft for school cash.

The next step is for the boy in front (*i. e.* New York), to buy draft and indorse it to some boy in the corner (Milwaukee) and sen it to him by mail—we sometimes throw it over—showing that draft like notes may be indorsed. He may vary this by having the draf directly payable to his Milwaukee friend who cashes it as before.

Now a difficulty arises: pupils make no question so long a drafts are sold at a premium, but they do not readily understan why sight drafts should be sold at a discount, why for $99.50 o New York money a draft on Milwaukee of $100 can be purchased Only when the pupil's curiosity and interest are aroused may th teacher safely explain what the balance of trade is and what conditions make it possible for a community to sell drafts on anothe sometimes at a discount, sometimes at a premium. The varyin values of the dollar as in Mexico and the United States will als explain the enormous premiums and discounts between these an other such countries.

The derived case of *buying* a draft for a given sum involve division, the latter being an Amount or Difference as Exchange i at a premium or discount. Problems in commission, where th agent has a fixed sum to remit by draft will afford opportunity fo review.

The scholars will now recognize that post office and expres orders are really drafts in which the government or company is a once maker and drawer through its respective agents. Blank should be hung on the wall.

Time drafts offer no new diffculty. The discount is the interes to which the purchaser or payee is entitled because he must wait fo payment. The corner pupil when presented with time drafts i required to "accept" them in regular business fashion, writing his name and date of acceptance across the face in red ink. The term "Letter of Credit" may now be explained. Foreign drafts or bills are not usually quoted by premium or discount. Sterling uses the £ as the standard giving its equivalent in Federal money, French and German exchange use the dollar standard and give its equivalent in francs or marks. The labor of calculation is really less, and during the days this is a subject of instruction, a monitor may write on the board the commercial quotations for the three countries in cash 30 and 60 day Bill of Exchange, as taken from the teacher's morning paper. For purposes of drill however it would not be amiss to give an arbitrary values as \$4.8665 = £1, and require pupils to find the face or cost of a draft at a given premium or discount. Metric measures, Custom House Duties, and Commission correlate easily with examples in foreign exchange.

Business Forms.

Under language (penmanship) the course directs social and business forms and business correspondence. Although all written work should be neat and legible, I think that if the business forms are to be selected as exercises in penmanship with all the care and elaboration which that implies, the pupil should besides use business forms with rapidity in connection with examples. Those which are necessary are

The Bill or Invoice and the Receipt.
The Check.
The Note.
The Draft and Bill of Exchange.

Bills had better be made out in regular blanks which pupils as a rule are able to supply. They should show discounts and commissions and should be short, rarely more than two items. The terms of credit should be entered in the proper place.

The Note is a promise, and all the data contained in it should be furnished by actual examples. Pupils should learn to endorse, and to make notes with and without interest. The printed forms of both this and the following had best be used for careful exercises in penmanship. In ordinary problems a pupil can make this entire document from memory with greater profit to himself.

The Check and Draft begin with an order. The similarity and difference between the two should be understood, and the pupil learn to refer to the names entered as the maker, payee and drawee.

Drafts and Bills of Exchange should be made in duplicate, and when he is able to write them in full without hesitation he may proceed to use the blanks furnished by the Supply List. I do not think it necessary for the pupil to learn the legal penalties of endorsers nor the form of protest, though the meaning of the last word may be briefly explained. He should however be compelled to enter the words "Value Received" on all notes.

The Psychology Of Number.

By Saul T. Badanes, Instructor, School No. 21, Manhattan.

I.

THE DIFFERENT STAGES OF THE DEVELOPMENT OF THE IDEA OF NUMBER.

SINCE ancient times, the question of origin and nature of number has had a great interest for philosophers; in fact, the concept of number plays such an important rôle, that every system of philosophy may almost be characterized by the explanation it offers of the idea of number. Aristotle premises number as a necessary condition for the idea of time. Kant reverses the order, by premising time as the necessary condition for the origin of the concept of number; Herbart quite successfully refutes Kant's view, and offers an explanation of his own. The school of philosophy, that begins with John Locke and culminates in J. S. Mill, explains the development of the idea of number out of our own experience. Mathematicians, not less than philosophers, have been trying to explain the concept of number, every one offering his own definition, and not seldom contradicting the others.

Recently, this question is gaining the interest of the teacher who is beginning to see that his view on the development of the idea of number must have a decisive influence on his method of instruction in elementary arithmetic. Metaphysicians may try to explain the nature of number; but for the teacher the only question is that of origin and development. Especially is the latter of importance.

Now, what is the process of development of the idea of number?

The genesis of the idea of number may be conveniently divided into three periods: 1. The spontaneous period precedes conscious counting, and is characterized by the fact that the child is able to perform an exact estimate of objects by mere comparison of sense impressions. Numeration in this period cannot be carried beyond the first three numbers. The second stage begins with the first non-spontaneously developed number. The condition of this discernment is the notice of an addition of a unit to the highest spontaneously developed number. This discernment is made permanent through the fact that it is indicated by an image or symbol. With every addition of a unit to the number next below in scale, a new inference is drawn — a new number is formed; these inferences are drawn, not as conclusions from other judgments, but in connection with concrete things. Hence, they are inductive in their nature. This manner of forming judgments gives rise to counting.

The process of forming numbers by mere addition of a unit to the number next below in scale can only be extended to the formation of small numbers. Since each new judgment depends upon counting concrete things, hence, new methods are needed to form large numbers and to shorten the process of counting. This demand is satisfied in the third period. In this period the mind is utterly detached from sensible observation; numbers are now formed, not as a result of counting, but as inferences drawn from the judgments of the previous period; in this period, number begins to be formed in a great many ways, which give rise to the different arithmetical operations.

It is clear that the process of addition as a mode of formation of numbers must be taught before subtraction and division, since by means of the last two processes we can only express lower numbers in terms of higher; as the smaller numbers are known first and best to children, they would then have to express familiar ideas in terms of less familiar if division should precede addition.

Having the idea of number developed, the child comes to a stage when a new species of quantity presents itself for his consideration; up till now, he was dealing with "plurive," or discrete, quantities, which he had to count in order to get a definite number. Now, he begins to consider "implurive" quantities, which have the aspect of a whole or unity; *i. e.*, lines, surfaces, bodies, days, hours, weight, etc. These quantities, known as continuous quantities, before they become the subject matter of arithmetic must be measured that is to say, must be separated in parts, reduced to a plural quantity, and then counted; thus, measuring is a more complex process than counting since it includes the latter as one of its elements. It is true that both of these processes may be treated as one from the point of view of logic that deals with the interpetation of result, but as to their psychological process, measuring consisting in breaking up, separating, or dividing an intuitable whole—in changing a unity into a plurality; whereas, counting consists in combining, uniting separate units, in constructing parts into a definite whole.

The reason why standards of weight and a clock were invented was because we could not form an exact estimate of weight or time by means of our senses.

This stage of continuous quantity culminates with development of the idea of ratio. This idea is expressed by means of two quantities of numbers, one to indicate the number of parts the first quantity contains, the other—the number of parts into which the second quantity is divided.

All mistakes in the method of teaching elementary arithmetic may be traced to the fact, that one stage was substituted for all the other stages. One method sees only the first stages, another begins with the last, that of ratio.

II.

An Exposition of the Grube Method.

Grube accepted the principle of Pestalozzi, that observation sense, perception is the basis of all instruction: he extended it the study of primary arithmetic, and by giving it a new turn form lated a principle, known since then as the monographic, or indiv ual and all-sided, consideration of Number.

Numbers, according to Grube, are comprehended and rec nized in the same manner as sensible objects; hence the method object-teaching is to be used also for teaching numbers.

We cannot have a knowledge of an object by observing it fr one point of view or by perceiving one of its qualities; hence cannot perceive a number by learning to-day addition, and af several weeks subtraction, and later on multiplication, etc.

Further, in object-lessons, we are to teach one object at a ti to consider all its qualities, and to proceed to the study of anot object only after a thorough study of the first; hence, conclu Grube, we are to teach one number at a time. We are to have all-sided consideration of each individual number, and we are exhaust all possible operations within the limits of one numb before we proceed to the next. And lastly, a thorough study of object consists of four steps:

1. Observation of the entire object.
2. Separating of its parts and comparing them.
3. Combining all the parts.
4. The use and purpose of the object.

Hence each number is to be considered under the following form:

I. Pure number:
  (*a*) Measuring (that is to say, separating or resolving number into equal and unequal parts) and compari
  (*b*) Rapid work;
  (*c*) Combining.
II. Applied number.

Illustration—The Four

I. The pure number—Measuring and Comparing. (To be de oped by the question-and-answer method.)

COMBINING.

What number must I take twice in order to get 4?
4 is twice what number?
Of what number is 2 the half?
Of what number is 1 the fourth?
What number can we take twice away from 4?
What number is 3 greater than 1?
How much must I add to the ½ of 4 in order to get 4?
How many times 1 is the half of 4 less than 3?

Applied Numbers.

How many cents in a 2-cent piece?

How many cakes can you buy for 4 cents, if each costs 1 cent? When each costs 2 cents?

If a top costs 2 cents, how much will two tops cost?

John paid for two cakes a three-cent and a 1-cent piece; what was the cost of each cake?

One quart has 2 pints; how many pints in 2 quarts?

What part of 4 cents is 1 cent?

What part of 4 cents is 2 cents?

The above set form is to be followed in the study of each number from one to one hundred, the number 1 not being excepted.

III.

A Criticism of the Grube Method.

Grube's Method is false from the point of view of *psychology*, as we do not acquire the idea of number by the process of sense-perception alone (with the exception of the first three or four numbers).

We have only to attempt to compare a number with a sensible object, in regard to the correlative psychological processes that go on in our minds, and the wide difference will be made manifest at once.

We perceive sensible objects as soon as they make an impression upon our mind, and we attend to these impressions and refer them back to the exciting cause. These sense impressions do not disappear with the removal of the exciting cause, but leave a trace in our mind in the form of an image, which recalls the object when that is not present before our consciousness.

In a word all sensible objects are, using the terms of Herbert Spencer, "presentative representative." The case is different with numbers. Our psychological analysis has shown that only the first three or four numbers are presentative representative; but the perception of the remaining numbers is not clear, and their clearness is diminished as they increase in magnitude. Hence they can never be definitely perceived without counting.

We may forget the name of an object and still have a picture of it; hence the name is not the essential element in the perception of a sensible object. But it is altogether different with a number; once we forget its name the number itself disappears. This fact perfectly illustrates the re-representative process in the idea of numbers.

Further, let a child see a lion for the first time, and the perception of this animal will be sufficiently clear and definite to recognize it if seen again, provided there is nothing else in the field of consciousness to hinder it. The case is different with numbers. Let a skilful reckoner count a series of objects, say 13; will he be able to tell by mere sense-perception another group of 13 similar objects that are near-by without counting?

Indeed, if we could acquire the idea of numbers, within the limit of 1 to 100, in the same way as the first three numbers, by the mere process of sense-perception, all arithmetic within that limit would be utterly superfluous. What use would there be of mediate processes when immediate ones are at hand?

By comparing a number with a sensible object, Grube neglects one of the most important attributes of a number—one which goes to make up its essential content; this is the scale relation of number.

By mere sense-perception we apprehend a sum as a plural quantity; but to ascertain the number we must count, and thus establish a definite quantitative relation of the sum to a certain member of the scale; hence a number cannot be comprehended as a separate individual, or as a whole, by itself, but only as a member of a scale or series.

Indeed, if we could comprehend every number as an individual by itself, and not as a member of a series, then why should, in our instruction, number 5 follow 4, and not the reverse; why could not 7 follow 4, or 11 follow 8, just as, in object-lessons, the study of one object may either precede or follow the other?

The view that number can impress itself upon the mind as a sensible object has resulted in the too great neglect of counting; and what is still worse, is the fact that the acquired numbers do not stand in any relation to each other—not being derived one from another, they easily disappear from the mind.

Grube uses the four fundamental operations simultaneously, as a means of strengthening the perception of number; then, of course, it is supposed that the pupil knows how to perform these operations and knows their logical meaning; but where did he acquire that knowledge?

To use the four operations with the first lesson of instruction, as a means of strengthening the percept of number in children, is to make an application of knowledge they do not possess.

The knowledge of addition presupposes the knowledge of forward counting, of which addition is an abbreviated process; the knowledge of subtraction presupposes the knowledge of backward counting. Further, we ought to teach, first, addition and subtraction, and only later multiplication and division, as the last two operations involve a more general process and can only be developed from the former two operations.

The Grube method is false from the point of view of *pedagogy*, as with so many operations upon each number it confuses the child; it demands too great an amount of attention on the part of the pupil—an amount which he is utterly unable to give. Further, the constant use of the same form of exercises and their endless repetition tire the pupil and weaken his interest for the subject.

Arithmetic In The Course Of Study.

By James Lee, Associate Superintendent of Schools, New York City.

THE purposes of instruction in arithmetic may be stated as follows: To impart knowledge, to develop skill in the use of numbers, and to develop the mental power. The course of study under consideration is an attempt to accomplish these purposes. To make the course a success the work of the different grades must be carried on intelligently. The view presented by the teacher of one grade should be known by and dovetail with that of the teacher in the grades below and beyond. In no other way can the course be presented as a harmonious whole; in no other way will the subject be seen by the child as an organic whole. This work properly lies within the supervision of the principal, and where it is lacking, a much greater load is placed upon the shoulders of the class teacher, and injustice is done to the child.

The history of instruction in arithmetic shows that up to the present century the purely practical end of instruction only maintained. Pupils were required to memorize rules; examples followed; [the interest of the learner was practically, nay utterly ignored; the numbers used in the examples were often very large.] Few before Pestalozzi made instruction become the means for the complete development of the child. Under him oral arithmetic became prominent; but he went to the other extreme by attaching very little value to written work or questions directly applicable to life.

To-day we demand that instruction in arithmetic should be so organized that it should not only develop in the pupil the power of thinking, but that he should also acquire the art of using numbers *accurately and quickly*, and be able to apply this art in solving problems of every day life. These aims do not interfere one with the other. On the contrary, they mutually help and supplement one enother. The application of knowledge to practical affairs brings the school and life nearer and keeps up the attention and interest of the pupil. It is clear that the practical purposes of life must become prominent in selecting the subject matter in the course of study, whilst the realization of the aim of instruction will depend largely upon the mode of presentation and method of instruction.

The character of the instruction in arithmetic will depend upon how far several fundamental principles of education are carried out.

teacher with appropriate material for introducing the new matte the pupil.

I.—INTRODUCTION TO DECIMALS.

United States money forms the natural introduction to study of decimals. From the work of the previous school year pupils know this table:

1 dollar, marked $, equals 10 dimes.
1 dime, marked d, equals 10 cents.
1 dollar, equals 100 cents.

Using this knowledge as a basis for future work, we systematically organize our material in the following way:

1.—REDUCTION.

(*a*) Reduction of dimes to cents and *reversely.*
Questions to be asked:
How many cents in 7, 14, 53 dimes?
How many dimes in 40, 60, 340, 870 cents?
(*b*) Reduction of dimes to cents and reversely.
(*c*) Reduction of dollars to dimes and reversely.
Questions to be asked:

$1 equals how many dimes?
$3 equals how many dimes?
$8 equals how many dimes.
$25 equals how many dimes?
$85 equals how many dimes?
50 d equals how many dollars?
70 d equals how many dollars?
190 d equals how many dollars?
790 d equals how many dollars?

(*d*) Reduction of dollars and dimes to dimes and revers
Questions: $4—6 d equals how many dimes?
712 dimes equals how many dollars and dimes?
(*e*) Reduction of dollars to cents and reversely.
Questions: $3, $9, $40 are how many cents?
400 cts., 800 cts., 1200 cts. equals how many dollars?
(*f*) Reduction of dollars and cents to cents.
Questions: $6—86 cts. equals how many cents; $12—34 equals how many cents?
(*g*) Reduction of dollars and dimes to cents and reversely.

II.—FEDERAL MONEY IN THE FORM OF DECIMALS.

A. Dimes as tenths of a dollar. Tenths.
As a preparation ask the class the following questions:
(*a*) $\frac{1}{10}$ of a dollar equals how many dimes?
$\$\frac{2}{10}$, $\$\frac{3}{10}$, $\$\frac{4}{10}$, $\$\frac{10}{10}$, $\$1\frac{1}{10}$, $\$1\frac{2}{10}$, etc., equals how many dimes?

Let there be frequent and pointed reviews.

Let the oral explanations throughout be as accurate, concise ıd simple as possible. Insist on clear and distinct enunciation. ote explanations or "model solutions" should be avoided.

Let no extraneous matter interfere with the matter in hand.

In written solutions economy in space and in the number of gures should be cultivated; insist upon neat and systematic rangement. Much time is often lost in ruling, preparatory to oth mental and written work. Rulers often distract, the pupils ıinking more of ruling than the problem; they are noisy. Why ot apply the instruction in free-hand drawing? Methods of examing and marking often take too much time.

Conduct the exercise with spirit; insist upon quick, accurate ork. Get facility in the fundamental operations, but not to such ı extent as not to advance the great mass of children beyond the erest rudiments of the subject.

At all stages of instruction, mental arithmetic should precede ritten. Pupils get a clearer insight into a new process when it is troduced by means of small numbers. Mental arithmetic is useful forming habits of attention, and to see if this is obtained, as a rule, ch pupil should be required to write the answer. It trains the ind to work rapidly. It is useful in reviewing the work of lower ades, and, finally, it has great value for practical life, inasmuch many questions in business are solved without recourse to long ıd formal written statements.

In this Monograph many able teachers have set forth their ews as to how arithmetic should be taught in the various grades. ıere are certain features of the course of study that I desire to ıphasize, certain practices which teachers will perhaps find helpl. To supplement some views presented by these writers a few ints are touched.

To begin with, it is a distinct gain to the pupils as well as to e course of study to have denominate numbers treated under two ads in the various grades rather than in a grade by themselves. ıpils get a better grasp of these numbers by giving them clearer eas of their relations very early in the course.

DECIMAL FRACTIONS.

The treatment of decimals, as laid out in the course of study, ars in mind not only the logic of the subject matter, but also the fferent stages of the development of the child's mind; it is due this fact, that the material is grouped differently from most of e existing text books.

In the following lines we wish to present to the teacher the der in which the different topics should be grouped, the typical amples for each division and subdivision and thus to supply the teacher with appropriate material for introducing the new matter to the pupil.

I.—Introduction to Decimals.

United States money forms the natural introduction to the study of decimals. From the work of the previous school year the pupils know this table:

1 dollar, marked \$, equals 10 dimes.
1 dime, marked d, equals 10 cents.
1 dollar, equals 100 cents.

Using this knowledge as a basis for future work, we can systematically organize our material in the following way:

1.—Reduction.

(*a*) Reduction of dimes to cents and *reversely*.

Questions to be asked:

How many cents in 7, 14, 53 dimes?
How many dimes in 40, 60, 340, 870 cents?

(*b*) Reduction of dimes to cents and reversely.

(*c*) Reduction of dollars to dimes and reversely.

Questions to be asked:

\$1 equals how many dimes?
\$3 equals how many dimes?
\$8 equals how many dimes.
\$25 equals how many dimes?
\$85 equals how many dimes?
50 d equals how many dollars?
70 d equals how many dollars?
190 d equals how many dollars?
790 d equals how many dollars?

(*d*) Reduction of dollars and dimes to dimes and reversely.

Questions: \$4—6 d equals how many dimes?
712 dimes equals how many dollars and dimes?

(*e*) Reduction of dollars to cents and reversely.

Questions: \$3, \$9, \$40 are how many cents?
400 cts., 800 cts., 1200 cts. equals how many dollars?

(*f*) Reduction of dollars and cents to cents.

Questions: \$6—86 cts. equals how many cents; \$12—34 cts. equals how many cents?

(*g*) Reduction of dollars and dimes to cents and reversely.

II.—Federal Money in the Form of Decimals.

A. Dimes as tenths of a dollar. **Tenths.**

As a preparation ask the class the following questions:

(*a*) $\frac{1}{10}$ of a dollar equals how many dimes?
$\$\frac{2}{10}$, $\$\frac{3}{10}$, $\$\frac{4}{10}$, $\$\frac{10}{10}$, $\$1\frac{1}{10}$, $\$1\frac{2}{10}$, etc., equals how many dimes?

(*b*) \$2—70 cts. equals $2\frac{7}{10}$ dollars.

Write: 3 dollars 30 cents in the form of dollars.

7 dollars 80 cents in the form of dollars.

11 dollars 40 cents in the form of dollars.

The class can now be told that a shorter way to write 18 dollars and 90 cents in the form of dollars (in the form of one denomination) is to leave out the denominator all together, and to separate the numerator from the units of the whole number by a point, called decimal point, thus: \$18—90 cts. equals \$18.9.

Questions: Write 14 dollars and 40 cents in the form of dollars.

Read: 3.7; 4.6; 9.2; 6.1.

4 units and 4 tenths equals what number? 4.4.

6 units and 3 tenths equals what number? 6.3.

Practice in this way till the class sees that the first figure to the right of the point is always tenths.

(*c*) Applications—Read: 6.7; 9.8; 134.3: 6.1.

Write: 1.4 equals how many tenths?

Give the value of each figure in the following numbers:

64.7; .9; 90.3; 64.7 equals 6 tens, 4 units and 9 tenths.

B. Cents as hundredths of a dollar. Hundredths and tenths.

(*a*) Let the class notice that one dollar divided by 100 is one cent or one-hundredth of a dollar.

(*b*) Ask the class how many hundredths of a dollar are—2, 3, 4, 5, 8, 10, 12, 17, 22, 37, 93 cents.

(*c*) Tell the class that hundredths are always written in the second place to the right of the point, thus 1 cent equals \$.01; 2 cents equals \$.02, etc.; 10 cents equals \$.10, 11 cents equals \$.11, etc.

(*d*) \$1.04; \$1.10; \$1.14; \$1.68; \$2.94; .07; \$1.50 equals how many cents?

(*e*) How much is one-hundredth part of one hundred?

How much is one-hundredth part of one?

In one unit are how many hundredths?

In one tenth of a unit?

(*f*) Applications: Write—1 hundredth equals .01.
2 hundredths equals?
3 hundredths equals?
4 hundredths, etc. equals?
10 hundredths equals?
12 hundredths equals?

Write in the form of a decimal: 60 dollars and 40 cents; 45 dollars, 7 dimes and 3 cents; 9 dimes, 4 cents; 6 cents.

Drill the class in writing decimals, first where no decimal order is missing, second where the whole number is missing, third where the tenths are missing, and last where the hundredths are missing.

3. *Adding* and *leaving* out ciphers at the right hand of decimals.

(3) Problems and applications.

The pupils should be thoroughly familiar with multiplication of a common fraction by a common fraction before they take up the study of multiplication of a decimal by a decimal.

DIVISION OF DECIMALS.

The typical examples in division of decimals may be grouped in the following order.

A *division of a decimal* by an integer.

(1) When there is no need to reduce any figure of the dividend to a lower order.

Examples: .6 divided by 2 equals?; .45 divided by 9 equals ?; .072 divided by 9 equals ?; .108 divided by 9 equals ?; .144 divided by 18 equals ?; .1545 divided by 15 equals ?; .135075 divided by 15 equals ?; 69.1355 divided by 7 equals ?

Explanation—72 thousandths divided by 9 equals 8 thousandths, equals .008.

(2) When either the whole number or the decimal must be reduced to units of a lower order.

Examples: 2.5 divided by 5 equals ?; 9.6 divided by 16 equals ?; 26.25 divided by 25 equals ?; .3 divided by 4 equals ?

Explanation—1 tenth divided by 4 equals 100-thousandths, divided by 4 equals 25-thousandths; .3 divided by 4 equals 3 times 25-thousandths equals .075.

(3) When the divisor is 10 or any power of 10.

To teach the rule for dividing a decimal by 10 ask the class the following questions:

(a) $1 divided by 10 equals ? Answer—1 dime or $.1.
(b) $2 " 10 " " 2 dimes or $.2.
(c) $4 " 10 " " 3 " $.3.
(d) $4 " " " " 4 " $.4.
(e) $5, $6, $7, etc. divided by 10 equals ?

Comparing the questions and answers the pupils will readily generalize, that when we divide a number consisting of units only by 10, the quotient is tenths and is equal to the units in number.

In a similar manner let the class divide $1, $2, $3, $4, etc., by 10 until they can readily draw the conclusion that tenths divided by 10 give for an answer an equal number of hundredths.

Observing that units divided by 10 give tenths for an answer, tenths divided by 10 give hundredths for an answer, hundredths divided by 10 gives thousandths, the pupils will readily formulate the rule for dividing by ten.

The rule for dividing by 100 and 1000 should be developed in the same way as the rule by 10.

(4) When the divisor is many times the power of 10.

Examples: 290.4 divided by 20 equals ? 290.4 divided by 80 equals ? 168.48 divided by 900 equals ?

3. MULTIPLICATION.

The work of multiplication of decimals may be grouped in the following order:

A. Multiplication of decimals by a whole number (integer).

(1) When the multiplier consists of units of the first order only.

Examples: .3 x 4 equals ?; .5 x 8 equals ?; .05 x 8equals ?;. 009 x 7 equals ?; .25 x 8 equals ?; 18.025 x 4 equals ?; 15.009 x 7 equals ?.

(2) When the multiplier is 10 or a power of ten. Begin to teach the class the rule for multiplying a decimal by 10, by asking the following questions ?

$				dime		$
.1x10	equals	?	equals	1x10	equals,	1.
.2x10	"	?	"	2x10	"	2.
.3x10	"	?	"	3x10	"	3.
.4x10	"	?	"	4x10	"	?

Comparing the questions and answers the pupils will readily generalize, that when we multiply tenths by 10 we get for an answer an equal number of units of the next higher order.

In a similar manner let the class multiply $.01 by 10, $.02, $.03, and so forth by 10 until the pupils can readily draw the conclusion that hundreths multiplied by 10 give an equal number of tenths for an answer.

Observing that, tenths x 10 equals units,
hundredths x 10 equals tenths,
thousandths x 10 equals hundreths,

the pupil will readily formulate the rule for multiplying by 10. The rule for multiplication by 100 and 1000 should be developed in the same way as the rule by 10. This method of teaching multiplication by 10, 100, is advocated because in the course of study this work precedes multiplication of fractions.

(3) When the multiplier is many times the power of ten.

Examples: .546 x 30 equals ?; .245 x 80 equals ?.

(4) When the multiplier is any kind of an integer.

Examples: 10.96 x 95 equals ?; 245.102 x 105 equalls ?.

(5) Problems and applications.

B. MULTIPLICATION OF A DECIMAL BY A DECIMAL OR MIXED NUMBER.

(1) When the multiplier is a decimal.

Examples: .5 x .3 equals ?; .08 x .4 equals ?; 105 x .4 equals ?

Explanation: .5 x .3 equals (.5 x .1) x 3 equals .05 x 3 equals .15 or $\frac{5}{10}$ x $\frac{3}{10}$ equals $\frac{15}{100}$ equals .15.

(2) When the multiplier is a mixed number.

Examples: .4 x 2.4 equals ?; .7 x 1.08 equals ?; .04 x 4.2 equals ?; .006 x .1.5 equals ?.

Explanation: $\frac{4}{10}$ x $\frac{24}{10}$ equals $\frac{96}{100}$ equals .96.

(3) Problems and applications.

The pupils should be thoroughly familiar with multiplication of a common fraction by a common fraction before they take up the study of multiplication of a decimal by a decimal.

DIVISION OF DECIMALS.

The typical examples in division of decimals may be grouped in the following order.

A *division of a decimal* by an integer.

(1) When there is no need to reduce any figure of the dividend to a lower order.

Examples: .6 divided by 2 equals?; .45 divided by 9 equals ?; .072 divided by 9 equals ?; .108 divided by 9 equals ?; .144 divided by 18 equals ?; .1545 divided by 15 equals ?; .135075 divided by 15 equals ?; 69.1355 divided by 7 equals ?

Explanation—72 thousandths divided by 9 equals 8 thousandths, equals .008.

(2) When either the whole number or the decimal must be reduced to units of a lower order.

Examples: 2.5 divided by 5 equals ?; 9.6 divided by 16 equals ?; 26.25 divided by 25 equals ?; .3 divided by 4 equals ?

Explanation—1 tenth divided by 4 equals 100-thousandths, divided by 4 equals 25-thousandths; .3 divided by 4 equals 3 times 25-thousandths equals .075.

(3) When the divisor is 10 or any power of 10.

To teach the rule for dividing a decimal by 10 ask the class the following questions:

(a) $1 divided by 10 equals ? Answer—1 dime or $.1.
(b) $2 “ 10 “ “ 2 dimes or $.2.
(c) $4 “ 10 “ “ 3 “ $.3.
(d) $4 “ “ “ “ 4 “ $.4.
(e) $5, $6, $7, etc. divided by 10 equals ?

Comparing the questions and answers the pupils will readily generalize, that when we divide a number consisting of units only by 10, the quotient is tenths and is equal to the units in number.

In a similar manner let the class divide $1, $2, $3, $4, etc., by 10 until they can readily draw the conclusion that tenths divided by 10 give for an answer an equal number of hundredths.

Observing that units divided by 10 give tenths for an answer, tenths divided by 10 give hundredths for an answer, hundredths divided by 10 gives thousandths, the pupils will readily formulate the rule for dividing by ten.

The rule for dividing by 100 and 1000 should be developed in the same way as the rule by 10.

(4) When the divisor is many times the power of 10.

Examples: 290.4 divided by 20 equals ? 290.4 divided by 80 equals ? 168.48 divided by 900 equals ?

Explanation—Separate the divisor into two factors one of which 10 or a power of 10 then work in the following manner:

168.48 divided by 900 equals 168.48 divided by 100 and by 9; 8.48 divided by 100 equals 1.6848; 1.6848 divided by 9 equals .1872.

B.—Division of an Integer by a Decimal.

Before the pupils take up this case of division ask them to work following examples :

(a) 8 divided by 4 equals ?	(b) 27 divided by 3 equals ?
80 “ 40 “ ?	270 “ 30 “ ?
800 “ 400 “ ?	2700 “ 300 “ ?
8000 “ 4000 “ ?	27000 “ 3000 “ ?

The pupils will readily generalize that if we take the dividend divisor 10, 100 or 1000 times as large, the quotient remains the le.

Hence 6 divided by .3 equals 60 divided by 3 equals 20; 6 ided by .12 equals 600 divided by 12 equals 50; 6 divided by .075 als 6000 divided by 75 equals 80.

Continue to give examples of this nature till the pupils see the e, that before we divide we make the divisor a whole number in the same time we make the dividend larger as many times as made larger the divisor.

The examples of this case are of the following nature :

144 divided by .12 equals ? ; 948 divided by 2.37 equals ? ; 210 ided by 37.5.

C.—Division of a Decimal by a Decimal.

The best way to teach this case is by means of examples of the owing nature:

(1) 3.5 divided by 1.4 equals 35 divided by 14 equals 2.5.
(2) 3.5 divided by .14 equals 350 divided by 14 equals 25.
(3) 3.5 divided by .014 equals 3500 divided by 14 equals 250.
(4) .35 divided by 1.4 equals 3.5 divided by 14 equals .25
(5) .35 divided by .14 equals 35 divided by 14 equals 2.5.
(6) .35 divided by .014 equals 350 divided by 14 equals 25.
(7) .035 divided by 1.4 equals .35 divided by 14 equals .025.
(8) .035 divided by .14 equals 3.5 divided by 14 equals .25.
(9) 035 divided by .014 equals 35 divided by 14 equals 2.5.

Continue to give examples of this nature until the pupils can rive inductively the rule of this case.

The last two cases of division of decimals should not be taken p till the pupils have mastered division of common fractions.

Care should be taken to train pupils to read decimals correctly; e. *g.*, 9 ten-thousands, not 9 tens of thousands. In connection with the reading of such decimals pupils should readily recognize comparative values ; *e. g.*, .4 is greater than .0789, or .01 than .009876, etc. Approximate values of decimals as compared with common fractions should be occasionally dwelt upon. This of course would follow instruction of the exact value of certain decimals: as .75 equals ¾; .875 equals ⅞. Following on the above suggestion .7634 is a little more than ¾; .8705 is somewhat less than ⅞, etc.

GRADE 5 A.

The term per cent. occurs here for the first time. The character % is used for convenience only. It is misleading to beginners, and in written work should be rarely used. Its meaning should be clearly understood. When a pupil sees "%" or "per cent," he should think "hundredths" at once. He should not be asked, for example, to express .06, or $\frac{6}{100}$, as per cent. (%); it is per cent. Per cent. (%) means *hundredths.*

GRADE 6 A.

In teaching "cost of carpets, etc.," superfluous problems should be entirely eliminated. In an elementary course, only those that come within the demands of actual life or that of the great majority of people should receive careful and accurate attention, especially as to results. In this as in all the grades under "Business applications" the methods and results of those engaged in the various lines of business under consideration should be remembered. For example, in carpeting, that the carpet is bought by the linear yard, the widths and pattern are considered; that in papering, a whole roll is allowed for any part of a roll required, etc., etc.

GRADE 7 B.

Problems in proportion may be solved by two methods—the ratio method and the method of unitary analysis.

Many claim that in elementary schools the latter should be preferred. It is more simple; it requires merely a knowledge of multiplication and division, and the use of common sense. It is purely a reasoning process which the pupils have been practising. They can, therefore, easily comprehend and remember it. By appealing constantly to reason, this process makes mechanical work almost impossible.

On the other hand the ratio method has the following disadvantages. The reasoning is based upon general abstract propositions. For example: more money, more goods; less time, more workmen, etc. Pupils do not seem to get the proper insight with the thinking process of proposition by means of ratio. They see easily that 5 men can do a piece of work in less time than 3 men, but why the time should be in relation as 5 : 3 they often fail to see. This leads to much guessing and purely mechanical work. The ratio method means more time. Pupils are more apt to remember the unitary method, if once fixed.

In connection with home work in arithmetic a warning might be given. Long and involved problems should never be given, enough only to keep up the interest of the pupils and of such a character as to throw them on their own resources should be assigned.

It should be remembered that arithmetic is an art—a practical art. Hence it involves many important devices, the principles of which should be explained. For example, factoring, cancellation, reducing to higher or lower terms, rejecting o's, etc., etc. Frequent examples to require these devices should be given.

In conclusion the various articles herein contained may induce many teachers to formulate their work for a given term. This is advised, and deserves commendation when intelligently and faithfully carried out; but no plan should become a stereotyped method of procedure for future classes. The intelligent and progressive teacher always accommodates himself to the time and the wants of his class, and his preparation is always such that he is not obliged to read religiously from a book the problems to be solved.

Jack's Work In Play.

By MARY C. CUNNINGHAM, Instructor Public School 75, New York City.

How should arithmetic be first presented to the little child? Arithmetic that is so unattractive, so dull in the abstract in the class room, and so real, so clear, so easy in the concrete in the side-walk games.

Those sidewalk games and dances, full of motor activity and calculation, how rapidly through them, the child counting steps and objects, learns numerical order.

That knowledge of numbers gained through restless play is brought to school with the child—brought to be used and added to, or kept like a forbidden article in the pocket of the brain.

Jack is now considered from a pedagogic standpoint and Jack's dullness, or brightness depends on his pedagogue's view as to the divorce, or union of work and play—and well for Jack if school build on his early education.

How can school build on this early education? A close relation is now to be established between the numerical concrete and the numerical abstract. (The child is to be led forward from the known to the unknown by easy steps. He has learned numbers through movements and handling objects, and to follow nature's law, this motor activity, this union of body and mind, must still be used as an aid to the use of figures. And these figures, the symbols of concrete numbers, can best be taught through touch and sight.

Pardon me, if I now grow personal, but I have been requested to tell how in my school the eye grasps the written symbol as the hand handles the objects.

On the first-year classes, the child is provided with a long box holding colored inch cubes and a slip of card board. The box has an inclined side marked off in spaces containing numbers, regularly arranged from one to ten.

The child, having emptied the box, placed the cubes behind the box and covered the figures with the slip, is now ready for work.

The cubes handled are of equal size to teach equal units and are brightly and differently colored to attract the eye of the child.

With eagerness the child responds to his teacher as she first directs him to place a cube in the first space on the left hand side of the top, second to move the slip, or lower the flap and see the ability to make relatively difficult things easy; he has the skill to waken, direct, and guide the self-activity of the pupils, and to create a cheerful and happy environment in the class-room.

Finally, a strong personality implies that the teacher has the right habits of thinking and doing, and that these habits are sufficiently plastic, so they can be modified by new tendencies and currents of thought.

While the educative value of a subject is closely connected with the method of instruction and the personality of the teacher, still each subject of study has its own special educative value which follows from the nature of the subject.

From this point of view the special educative value of arithmetic is as follows: first, the principles of arithmetic appear to have a greater certainty that any other truths derived inductively; such as the rules of grammar, hygiene, natural science; second, the principles of arithmetic are of more general application, or more immediate practical use.

The next MONOGRAPH will be prepared by Examiner Jerome A. O'Connell. This will prove to be one of the most valuable of the series for it will discuss some of the most important problems of school work—Class Management.

Proper government of the class is to serve the following purposes: (1) it is to prepare a proper disposition for instruction; (2) it is to give distinctness and balance to the pupil's natural inclinations; (3) it is to cultivate the spirit of industry; (4) it is to prompt the pupil to self-government; (5) it is to quicken the voice of conscience; (6) it is to prepare for glad submission to the laws of nature and society.

Herewith is presented a partial list of contributors and the topics they will discuss in the Class Management Monograph.

THE DUTIES OF A PRINCIPAL.
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THE RELATION OF SCHOOL DISCIPLINE TO MORAL EDUCATION.
WM. T. HARRIS, U. S. Commissioner of Education.

THE RELATION BETWEEN THE TEACHER AND THE PUPIL.
RICHARD G. BOONE, Superintendent, Cincinnati, Ohio.

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the Point of View of the Class Teacher.
Oswald Schlockow, Instructor, New York City

The Moral Influence of the Public Schools.
Wm. R. McCarthy, Principal, New York City.

Class Management.
Jerome A. O'Connell, Board of Examiners, N. Y. Ci

The pupil that whispers or in any way attracts the attention of his fellows not only does something to make his own school time of no account, but he also does much to destroy the time and profit of his fellow pupils and the teacher. We shall see, further on, that even if the pupil converses with his fellow pupils by whispering for good purposes—endeavoring by that means to get information about his lesson or to give information about it—he does so much to destroy the efficiency of his own or of his fellows' work so far as silent preparation is concerned.

If it is true, as scientific men tell us, that man has descended from the anthropoid apes, we can see more clearly the significance of this moral training which suppresses the tendency to prate and chatter. The mere instinct for expression of the half-cultured child is to utter what comes first to his mind. He pours out his impressions before he has allowed them to ripen by reflection. If he can repress the utterance of one thought until he can add another and another and another to it, he can deepen his power of thought, whereas if he utters the thought carelessly as it arises in his mind it passes away from him and he does not make a synthetic thought by adding to the immediate impression all other thoughts that relate to it. This is the deep significance of the school virtue of silence. It makes accessable the depths of thought and reflection. It makes possible the individual industry of each and every pupil associated in the school. Each one can detach his industry from the industry of the whole and pursue original study and investigation by himself although surrounded by a multitude. This individual industry is prevented by anything on the part of his fellows which tends to distract him.

The fourth virtue that has been named is industry. Industry may be of various kinds, but the industry of the school is essentially study of the book. The pupil is to add to his own feeble and undeveloped powers of thought and observation these faculties as exhibited in the strongest of his race. The printed page is the chief means by which he adds to his own observation and reflection what has been observed and thought by men specially gifted in these things. The pupil shall learn by mastering his text-book how to master all books—how to use that greatest of all instruments of culture, the library. He shall emancipate himself by this means from mere oral instruction. In the case of oral instruction the pupil must wait upon the leisure of the teacher, trusting to his memory or writing down the words and pondering them on some future occasion. In the presence of the book he can take the sentences one by one and reflect carefully upon the meaning of each word and each sentence. The book waits upon his leisure. The book contains the most systematic presentation of its author's ideas. Through the book, the observers and thinkers of the past become present. Those of distant and inaccessible countries come to his side. This shows us the significance of the kind of labor which the pupil performs in his school industry.

I can describe the nature of the schoolroom industry best by explaining the two kinds of attention which the pupil must cultivate and exercise in the schoolroom. There is, first, the attention which the class must give collectively to the recitation and to the teacher who conducts it, and there is, second, the individual industry of the pupil working by himself. I have already mentioned some of the advantages of the class recitation in discussing the elementary virtues of regularity and punctuality. But it is in the development of these two kinds of attention that the chief value of the class recitation consists. In the recitation, as it is called by us in America (or in the *lesson*, as it is called by English educators), the teacher examines the work of his pupils, criticises it, and discusses its methods and results. The pupils in the class all give attention to the questions of the teacher and to the answers of their fellow pupils. Each one, as I have already described, learns both positive and negative things regarding the results of his own studies of the lesson. He finds some of his fellow pupils less able than himself to grasp certain points in the subject of study. He finds others who are more able than himself, pupils who have seen farther than himself and developed new phases that had escaped his attention. He is surprised, too, at sides at points of view which the teacher has pointed out; items of information or critical points of view that had escaped his own attention and the attention of his fellow pupils in the class. The pupil gains an insight into human nature such as he never had before. He sees the weaknesses and the strength of his fellows; he sees the superiority manifested by the teacher, who is maturer than he, and who has reinforced his own observation and insight by the observation and insight of observers and thinkers as recorded in books. He measures himself by these standards and comes to that most important of all knowledge, self-knowledge.

This kind of attention which he exercises in lessons or class exercises is a kind of attention which may be called critical alertness directed outward to the expressions of other minds, namely, of his fellow pupils and teacher. Step by step he watches carefully the unfolding of the lesson, comparing what is said with what he has already learned by his own effort. After the recitation is over he takes up the work of individual preparation of another lesson, but he has improved in some respect his method, because he is now alert in some new direction. He has an intellectual curiosity in some new field that he had not before observed; what the teacher has said or what some bright pupil has said gives him a hint of a new line of inquiry which he ought to have carried on in his mind when he was preparing his lesson of the day before. Now he is consciously alert in this new direction and he reaps a harvest of new

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At first the pupil finds himself with feeble will power and unable to absorb himself in his own task. He is easily distracted by what is going on around him. By using his moral will in self-control he gains strength from day to day in concentrating his attention and in neglecting all that is not essential in his individual industry.

Having enumerated these four cardinal duties in the schoolroom—regularity, punctuality, silence, and industry—let us now note their higher significance reaching beyond the schoolroom into the building of character for life. The general form of all school work is that of obedience. The will of the pupil comes into relation with the will of the teacher and yields to its sway. The will of the pupil inhibits its own wayward impulses, suppresses them, and supplants them by a higher rational will. In the act of obedience to a higher will the pupil becomes conscious of responsibility. Responsibility implies a sense of freedom. The child becomes conscious of its ability to accept or refuse—to obey or disobey. It becomes conscious of its power to originate actions and to give a new form to the chain of causation in which it finds itself. The great fact in the schoolroom is that the pupil is held responsible at each and every moment for all that he does. If he forgets himself and uses his voice, if he whispers, if he moves from his seat, if he pushes a book off his desk by accident, all these things are brought back to him at once by the presiding teacher. He is responsible not only for positive acts but also for neglect. Whatever he does or whatever he leaves undone is his business; this is justly regarded as the most potent means of ethical instruction. To use the language of the founder of the great system of ethics in modern times, Immanuel Kant, the child learns in the school to have a sense of his "transcendental freedom." He learns that he and not his environment is responsible for what he does or leaves undone. He regards himself as the author of his deed ; he recognizes it as true that he is in the midst of a flowing stream of causation ; he is the focus of innumerable influences, all tending to move him in this or that direction or hold him in this or that position. But he recognizes himself as an original cause, a will power that can react on any and all the influences that are flowing inwards towards himself. He can modify this stream of causation ; he can hold back and inhibit the several influences which flow towards him ; he can shape all of these so as to conform them to the ideals of his freedom ; he can act in such a way as to extend his influence upon the external world and upon his fellow human beings; he can act so as to realize his ethical ideals. This is the sense of transcendental freedom. Transcendental freedom does not mean that any person can do or perform anything ideas that would have been passed over in neglect had he not received the benefits of the kind of attention which I call "critical alertness" in the work of recitation or lesson.

This kind of attention is something that cannot be developed by the pupil in any other way so well as in that school invention called the "recitation" or "lesson."

Let us now consider the other kind of attention which the pupil cultivates and exercises in school. While pupils of one class are reciting the pupils of the other class are preparing their lesson. Each individual is or should be absorbed in the work of preparation, not jointly with his fellows, questioning them or answering them, but by absorption on the part of each in his own work without reference to the other pupils in the room or the teacher; each one must be able to study his own book and resist the tendency to distraction which comes from the lesson or recitation that is going on with the other class. To shut out from one's mind all objects hat do not concern it and concentrate one's thoughts and observaion upon a special given subject, whether it be a scientific presentaion of the text-book or whether it be the investigation of a topic by means of objects themselves or by the use of many books—this kind f attention is of the utmost importance. It is that of individual ndustry, while the other kind is that of critical alertness. Critical lertness follows the thoughts of others; takes an active part in the ialogue which is going on. The ancients call this business of quesions and answers and critical alertness the dialectic, and this kind of attention is that which is trained in dialetic. But the attention which is absorbed upon its object is a different matter, although of equal importance. The pupil should learn how to neglect the distracting circumstances of the schoolroom, the movements of pupils n the tactics of the class, the dialectic of question and answer going on with illustrations and points of interest, and equally the work of his fellow pupils in the class preparing themselves by absorbing study like his own. He lets these all slip by him, disciplining himself to abstract his attention from them and to hold himself in utter indifference to these outside events. He brings to bear his best intellect upon the problems of his task, critically questions the meaning of his author, and applies himself to the work of verifying by his own observation and reflection what is compiled for him by the author. He is learning by this private industry how to reinforce himself by the work of his fellow men; he cannot help himself through the help of others unless he verify their results. Verification is always an act of self-activity. Memorizing the text of the book, committing to memory what has been told one—this is not self-help until the internal work of verification has been accomplished.

The second kind of attention that we are here considering has therefore its most important feature in verification. What someone (*b*) *Duties to others.*—Duties to self rest on the consciousness of a higher nature in the individual, and of the necessity of bringing out and realizing this higher nature. Duties to others recognize this higher ideal nature as something general, and hence as also the true inward self of our fellow men.

There are three classes of duties toward others :

(1) Courtesy—including all forms of politeness, good breeding, urbanity, decorum, modesty, respect for public opinion, liberality magnanimity, etc., described under various names by Aristotle and others after him. The essence of this virtue consists in the resolution to see in others only the ideal of humanity and to ignore any and all defects that may be apparent.

Courtesy in many of its forms is readily taught in school. Its teaching is often marred by the manner of the teacher, which may be sour and surly, or petulant and fault-finding. The importance of this virtue both to its possessor and to all his fellows demands a more careful attention on the part of school managers to secure its presence in the schoolroom.

(2) Justice.—This is recognized as the chief in the family of secular virtues. It has several forms or species, as, for example, (*a*) honesty, the fair dealing with others, respect for their rights of person and property and reputation; (*b*) truth-telling or honesty in speech—honesty itself being truth-acting. Such names as integrity, uprightness, righteousness, express further distinctions that belong to this stanch virtue.

Justice, like courtesy, in the fact that it looks upon the ideal of the individual, is unlike curtesy in the fact that it looks upon the deed of the individual in a very strict and businesslike way, and measures its defects by the high standard. According to the principle of justice each one receives in proportion to his deeds and not in proportion to his possibilities, wishes, or unrealized aspirations. All individuals are ideally equal in the essense of their humanity; but justice will return upon each the equivalent of his deed only. If it be a crime, justice returns it upon the doer, as a limitation of his personal freedom or property.

The school is perhaps more effective in teaching the forms of justice than in teaching those of courtesy. Truth-telling especially receives the full emphasis of all the power of school discipline. Every lesson is an exercise in digging out and closely defining the truth—in extending the the realm of clearness and certainty further into the region of ignorance and guesswork. How careful the pupil is compelled to be with his statements in the recitation and with his previous preparation !

Justice, in discovering the exact performance of each pupil and giving him recognition for it, may become injustice in case of carelessness on the part of the teacher. Such carelessness may suffer the weeds of lying and deceit to grow up and it may allow the dishonest pupil to gather the fruits of honesty and truth, and by this it may offer a premium for fraud. The school may thus furnish an immoral education, notwithstanding its great opportunities to inculcate this noble virtue of honesty.

The private individual must not be permitted to return the evil deed upon the doer, for that would be revenge, and hence a new crime. All personality and self-interest must be sifted out before justice can be done to the criminal. Hence we have another virtue ——that of respect for law.

(3) Respect for law, as the only means of protecting the innocent and punishing the guilty, is the complement of justice. It looks upon the ideal as realized, not in an individual man, but in an institution represented in the person of an executive officer who is supported with legislative and judicial powers.

The school, when governed by an arbitrary and tyrannical teacher, is a fearfully demoralizing influence in a community. The law-abiding virtue is weakened and a whole troop of lesser virtues take their flight and give admittance to passion and appetites. But the teacher may teach respect for law very thoroughly on the other hand. In this matter a great change has been wrought in the methods of discipline in later years. Corporal punishment has been very largely disused. It is clear that with frequent and severe corporal punishment it is next to impossible to retain genuine respect for law. Punishment through the sense of honor has, therefore, superseded for the most part in our best schools the use of the rod. It is now easy to find the school admirably disciplined and its pupils enthusiastic and law-abiding—governed entirely without the use of corporal punishment.

The school possesses very great advantages over the family in this matter of teaching respect for law. The parent is too near the child, too personal to teach him this lesson.

In closing let us call up the main conclusions and repeat them in their briefest expression.

1. Moral education is a training in habits and not an inculcation of mere theoretical views.

2. Mechanical disciplines are indispensable as an elementary basis of moral character.

3. The school holds the pupil to a constant sense of responsibility and thereby develops in him a keen sense of his transcendental freedom; he comes to realize that he is not only the author of his deed, but also accountable for his neglect to do the reasonable act.

4. Lax discipline in a school saps the moral character of the pupil. It allows him to work merely as he pleases, and he will not reinforce his feeble will by regularity, punctuality, and systematic industry. He grows up in habits of whispering and other species

of intermeddling with his fellow pupils; neither doing what is reasonable himself nor allowing others to do it. Never having subdued himself, he will never subdue the world of chaos, or any part of it, as his life work, but will have to be subdued by external constraint on the part of his fellow men.

5. Too strict discipline, on the other hand, undermines moral character by emphasizing too much the mechanical duties, and especially the phase of obedience to authority, and it leaves the pupil in a state of perennial minority. He does not assimilate the law of duty and make it his own.

The law is not written on his heart, but is written on his lips only. He fears it, but does not love it. The tyrant teacher produces hypocrisy and deceit in his pupils. All manner of fraud germinates in attempts to cover up shortcomings from the eye of the teacher. Even where there is simple, implicit obedience in the place of fraud and the like there is no independence and strength of character developed.

The best help that one can give his fellows is that which enables them to help themselves. The best school is that which makes the pupils able to teach themselves. The best instruction in morality makes the pupil a law unto himself. Hence strictness which is indispensable must be tempered by such an administration as causes the pupils to love to obey the law for the law's sake.*

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Motives In School Discipline.

By **Emerson E. White**, Author and Lecturer, Columbus, O.

THE first question in pedagogy is *the end to be attained.* This
is not only the first, but the fundamental question. The end
largely determines the means. It guides the process. It is
decisive test of method and device. A wrong end is subversive
effort, and the acceptance of partial ends as comprehensive or
imate is the source of hobbies and fads.

What are the ends to be obtained in school discipline? The old-
ie teacher set before himself as the end to be realized *good order*
the schoolroom. A few of the more thoughtful added *applica-*
n in study. Good order and application were not only the ends
t the test of good discipline in the typical old-time school. The
epted ideals of good order were often very mechanical. In many
ools a sort of show order was rigorously maintained. Pupils
re required to "toe the mark" when reciting; to sit with arms
ded across the breast or with hands clasped above the head; to
with both feet on the floor (if within reach) and face the teacher;
rise and sit at a signal: to open and close books at a beck, etc.,
The martinet was the common ideal of a good disciplinarian.
s surprising how persistently this ideal of school discipline has
tinued in American schools.

It is conceded that order of the right kind and application are
ortant factors in effective school training, but they are only
ditions, not ends. No result that terminates with the school can
made an end of its training. Indeed the school is not an end;
s only a means to an end—that end the preparation of pupils for
t living. Since a school is a place of cooperative as well as
ividual effort, there must necessarily be a good degree of uni-
nity of activity. In a large school there must be more or less
what has been characterised as "company front" discipline.
mistake is, however, always made when a school is handled as a
chine, and the perfection of its mechanism is accepted as the
lization of the true purpose of school discipline.

What then are the ends of school discipline? The first of these
ls is to train pupils in the power and habit of *self-control.* Self-
trol is essential to right living. Budha put in place of the
ahman sacrifices three great duties, and the first of these was
control over self." This was a fine insight. Self-control is an
sential element in character.

It is to be noted that self-control is not a native endowment of childhood. It is a power acquired through the disciplines of child life. It is a result reached, and in reaching it there is an important place for outer control. God places by the side of every opening life two wills as well as two hearts. Wise control is the birth-right of a child.

There is much wild talk just now about the tyranny of child control, the barbarism of authority in school training, etc. I have heard a prominent educator recently make the prophecy that in the school of the next century there would be no control of pupils; that in the coming school the child will have his own sweet will. The weakness of the prophecy was the absence of the comforting assurance that the wills of children will all be sweet in the next century. Thousands of mothers are now hearing this sort of nonsense from so-called "leading lights" in education, and, as a result, they are abandoning the proper control of their children. It needs no prophet's ken to predict that many of these mothers will reap in tears the fruit of this silly sentimentalism. The child's will is to be made sweet not by giving its whims free play, but by a firm and loving control in the home and the school, the power of self-control being meanwhile developed by wise training. One of the highest arts in child training is the developing of the power of self-control.

But self-control is only a negative virtue, important, it is true, but not the most important element in character. Hence self-control cannot be made the one complete end of school discipline. It must also develop in the pupil the power of *self-direction*—the putting of his desires out into right action. Nor is this end realized by giving free play to the pupil's self-activity. Activity born of self may be wrong, and its exercise may be subversive of character. The power of true self-direction is developed through guided activity. That philosophy of childhood that sees in the child only an angel with all self-activity right and beautiful, has no basis in human experience. On the contrary, there is no justification for the assertion that every child is born a savage, and must pass through the experiences of savage life. In the being of a child are not only high possibilities of virtue, but tendencies to evil. It is the function of child training to exercise the good and exorcise the evil. School discipline must not only give the pupil the power of self-control, but the higher power of self-direction. As the French programme puts it, "The school must be made an apprenticeship in right living."

While self-control and self-direction are the fundamental ends of school discipline, it is helpful to the teacher to see these two ends united in one. I formerly expressed my idea of this unity of end by the term *self-government;* but this term gives too much prominence to the element of self-control. I am indebted to Matthew

Arnold for a happier term to express this desired unity—the term *self-conduct.* This unites self-control and self-direction in better proportion than self-government, and is in other respects a more helpful word.

Let us then agree that the central, guiding end of school discipline is *to train pupils in the power and habit of self-conduct.*

To realize this supreme end, school discipline must be made an effective training of the will, or, if preferred, an effective training of the soul in willing. It seems unnecessary to discuss the relation of the will to conduct. It must suffice to say that the will is the act-determining power of the soul; that character is primarily a state of will. It follows that self-conduct involves the power of the will to act habitually from right motives—a power that is attained through proper training.

It is important to note that freedom is a necessary condition of effective will training. The power of right choice is developed, as every other psychical power is developed, *by its exercise;* and there can be no choice in the absence of the power to make a different choice. There can be no choice in an act that is necessitated.

It does not follow that there is to be no outer control or compulsion in school discipline. As already shown, the child often needs outer control and direction as a preparation for self-control. That right action may be secured, wrong action must be restrained. The child's freedom is exercised under wise oversight, and guidance. It may be objected that this involves too fine a balancing of freedom and restraint for ordinary teachers. The answer is that all true child training involves a fine balancing of related factors, and this makes teaching a fine art.

The discipline of a school affords excellent opportunities for the effective training of the will. There are several results so necessary to a good school that they have been called "school virtues." These include regularity of attendance, punctuality, neatness, accuracy, silence or order, industry or application, and obedience. The securing of these important results may be made occasions for the most effective training in self-conduct. It is equally true that these results may be attained by the use of means that neither train the will in virtuous action nor strengthen character.

We thus reach the truth that the moral efficiency of school discipline depends primarily *on the character of the motives by which its ends are secured.* The wise use of high and worthy motives ennobles character; the use of low motives increases the bondage of the will to selfish desires and impulses. I have seen schools in which regularity of attendance, diligence in study, and other desired results were secured by motives sadly subversive of true self-conduct. No temporary interest in study, no external propriety of conduct can compensate for the habitual subjection of the will to the appeal of selfish motives. Howsoever fair the results thus attained may appear, the issue of such training in the life is moral weakness. School training will not stand the decisive test of right living if it fails to make its appeal to the will through right motives.

No change in school discipline in recent years has been more marked or more beneficent than the increasing substitution of natural for artificial motives. The old-time teachers as a class had faith in "rewards and punishments." Pupils were incited to effort by promised rewards and restrained from wrong doing by the fear of punishment, and the rewards bestowed and the punishments inflicted had small natural relation to what was required or forbidden. They were largely artificial incentives, thrust between the pupil and duty and taking the place of those natural rewards and satisfactions that attend right action.

Among the artificial rewards in common use in the early school were: (1) prizes, including medals, money, books, etc.; (2) honors, including class honors, honor rolls, honor seats, etc.; (3) privileges, as holidays, positions as monitors, tutors, etc.; and (4) immunities, as exemption from examinations and tasks. These artificial rewards were once widely used to secure regularity and punctuality in attendance, application in study, good deportment, etc. The pupils worked for these rewards as for wages.

The weakness of these artificial incentives as a means of training character is now so generally recognized by thoughtful teachers that it seems unnecessary to enter upon a consideration of their value here. It is conceded that there was some justification for their use in the typical old-time school. Its exercises touched slightly the natural interests of the pupils. The tasks imposed were largely drudgery,— a memorizing of words, drills that gave little conscious skill, a suppression of bodily activity, and, generally, a dull routine. There was so little in the school to attract and interest pupils that it became necessary to resort to artificial expedients. The same conditions still exist in many schools. Their dull routines and irksome suppressions need to be supplemented by something that will awaken interest and incite to effort.

The wise teacher now seeks to make school life attractive, interesting, and satisfying, and just to the extent that this result is attained, the necessity of using artificial incentives disappears. Only poor teaching needs artificial propping. It is believed that many teachers who are capable of better things, are still using artificial rewards.

The accepted fact that self-conduct is the end of school discipline gives a deep significance to the question of motive. It is not enough that regularity, punctuality, etc. be secured. They must be attained by an appeal to those natural motives that attend human effort as a consequence and satisfaction—motives divinely implanted in the human soul as the reward and the stimulus to effort.

Among the natural incentives that lie in school life are the desires for (1) good standing, (2) approbation, (3) knowledge, (4) efficiency or power, (5) self-government; and (6) future success. To these desires may be added (7) the sense of honor, (8) the sense of right, and (9) the sense of duty. A glance at these natural incentives will suffice to show not only their vital relation to will training and character, but also their efficiency in securing desired school results.

The desire for *good standing* has its source in the desire for success—one of the strongest incentives to effort. Success in what one undertakes affords a high satisfaction and the hope of attaining success stimulates and sustains effort. The desire for good standing involves neither competition nor emulation. It is simply a desire to reach an approved standard, and the higher the standard the greater the satisfaction experienced in its attainment. The desire for good standing may easily be made an artificial incentive. This is always true when the *sign* of standing is made the real end of effort.

The desire for *approbation* appears early in childhood and continues through life. It acts both as an incitant and as a restraint, and is at all times an active principle in human conduct. The degree of satisfaction attending approbation depends on one's esteem for those who bestow it. The one thing to be always avoided in the use of approbation as an incentive is false praise. "Praise is cheap," says the old proverb, but false praise is dear as well as foolish. The desire for praise easily passes into a desire for flattery, the feeder of vanity. The commendation of pupils should be honest and sincere. It should recognize faithful endeavor as well as success.

The desire for *knowledge* is an appetite of the soul, and the satisfaction which attends its acquisition is a God-ordained means of human growth and perfection. The child's desire for knowledge is keen, and its gratification may make school life a delight. The normal child does not need to be bribed or driven to the acquisition of knowledge that appeals to his interest.

The same is true of the child's desire for *efficiency*. This desire is the source of activity and effort, and is necessary to the child's growth in power and skill, always the resultant of activity. The desire for skill in doing is keener in childhood than the desire for knowledge, activity being necessary to growth of body and mind. The school that gratifies its pupils' natural craving for efficiency has no need of artificial incitants to effort. Every exercise is its own satisfying reward.

The desire for *self-government* increases with years, but is an active principle in childhood. It is the source of those disciplines that prepare the child for a state of freedom under law. Childh is, indeed, the period of preparation for liberty. The school m be made an effective training in self-government.

The desire for *future success* is strongest in the period education that falls in the high school and college. In noble mi it takes often the form of future usefulness—the desire to do need service.

> "For the cause that lacks assistance,
> For the wrong that needs resistance."

It is only necessary to refer to the sense of *honor*, the sense *right*, and the sense of *duty*—motives which have so central a pl in moral training.

The efficiency of natural incentives in school training has be attested by the experience of thousands of teachers. It is tr that all high motives need to be quickened and strengthened vital moral instruction—instruction that awakens right feelin quickens the conscience, and trains the moral judgment. Mo training always needs to be vitalized by moral instruction. ultimate test of the school is character, and the central duty of school is vital moral training. Whatever of religious truth influence is necessary for such training has a rightful place in school.

It is not herein claimed that the use of artificial rewards school training is never justifiable. There may be conditions t make their use both expedient and right. It is, however, held t they should never be used when natural incentives can be m effective. When resorted to, they should be used as tempor expedients to attain special results—never as a permanent syst Of two motives equally effective in securing desired results, *higher* should always be used. The two great foes of true sch training are artificialism in motive and mechanism in teaching.

Problems in School Supervision.

By Sarah Louise Arnold, Supervisor of Schools, Boston, Mass.

THE unsolved problems in school work are not confined to methods and principles of teaching. Questions of organization and management, also, are of vital importance and upon their solution the interests of the schools to a large extent, must depend. The management of the school system affects the results in every school-room, helping the teacher in her skillful practice, or warping and hindering that practice. It is well, therefore, for teachers to discuss with principals and superintendent, the plans which minister to or retard the general good of the schools.

Every one of us, in taking up his work, accepts with it certain advantages and certain limitations. The natural tendency of the superintendent, supervisor, or director, is to lose sight of the details which are required in the concrete application of his theory. This grows out of his best work. One of his chief duties is to study his subject as a whole. This subject may be teaching of arithmetic, the organization of a building, or the administration of a city system. Every question which he studies he must consider in its relation to the whole. He must universalize the single fact or process, and judge how it affects the general good. Sitting at his desk, he surveys the sum total of knowledge gained or to be gained by the child, parcels it according to the number of years allowed for the subject; or to the capacity of the pupils, groups facts according to principles or processes; and prepares the course of study which is to be administered, or the plan of organization which is to be followed. The inevitable tendency of working for the general good, is to leave the consideration of details. Therefore, the superintendent needs to be balanced by the constant presentation of the concrete results which are secured, or the difficulties which are created, in the general application of his principle.

On the other hand, the teacher in the grade and room where she has perhaps been fixed for years, tends to overestimate the value of the incidental. She is necessarily concerned with the details which she must arrange in following the principle and methods which have been outlined in the course of study, or in adjusting her school to the organization which has been decreed. The actual difficulties which she meets in this adjustment, are constantly before her mind. She naturally tends to consider as of first importance, the immediate achievement of the single class exercise, or the sum total of promotion from her own grade. The problem which she must face, therefore, is the reverse of that which is presented to the superintendent. Her work must be no less faithful, perhaps not less intense in its study of the concrete and individual; but it must be balanced and brought into true proportions by a study of general principles. She must obtain a clear conception of the common goal and the conditions which result in the common good.

The work of teaching children is too vast a work to be accomplished by a single individual, or even to be well done by a small group of individuals, however wise or however earnest they may be. As a matter of fact, the tuition of the school is supplemented by that of hundreds, yes thousands of teachers, whose lessons the child unconsciously learns. The school has so long been isolated from the rest of life, and the work of the school has so long been considered as apart from the work of real life, that, we as a body have failed to realize our dependence upon others. The results which we secure with our bright children we do not readily attribute to the teaching of the home and of the community, although we are tardy to place the responsibility for dullness and ignorance upon the teachers in the home and the neighborhood. But in both cases we should remember that we are simply joining forces with innumerable other teachers. A thoughtful study of education ought to reveal to us the scope of the work in which we are engaged and help us to realize that no one of us alone is equal to his task. Every teacher needs to be supported and strengthened by the experience of every other teacher. As a matter of fact, the best teaching is a composite of the experience of teachers of all ages. Some of this experience has been consciously accumulated by the teacher in her reading, lectures, and courses of study, but much has been unconsciously learned through her general experience. There is nothing in our teaching that may not be strengthened and made more beneficial by some influence arising from the experience of others.

If this be true in general, does it not follow that here in our school system is the place for the direct application of the principle? The theories and general plans of the superintendent or principal need to be modified by immediate contact with the daily work of the graded school; and the tendencies to a fixed routine and a limited horizon on the part of the teacher, should be offset by the realization of the relation of her own work to the general good.

Here, then, is the true relation between the director and the directed, the supervisor and the supervised. Each needs the help of the other, and the work of the schools is best fulfilled when this co-operation is esteemed, desired and secured. A teacher may say, "I can get along just as well without the superintendent," but this remark is not true if she is a progressive teacher and her superintendent is capable of the right kind of work. She needs the ligh of the experience which he gains in his survey of the many schools. The superintendent who claims to be independent of his teachers, is equally at fault. If he says: "I know more about this subject than you do," he speaks unwisely. What he really means is, "I know this subject in a different way. I see it in a different light. I need the help of your daily experience and you need the help which comes from my study of the general situation."

How is this exchange best secured? How can the teacher help the superintendent and the superintendent help the teacher?

This co-operation can be attained only through conferences, in which, first of all, each learns to understand the aim of the other. The conference is worthless without the mutual confidence and respect. It should be taken for granted at the outset, that the superintendent desires the best good of all the schools, and that every teacher desires to contribute to the best good of all the schools.

Having accepted this common purpose we take hold of hands in our efforts to reach our goal. Now we must decide how we can best secure unity in essentials and freedom in non-essentials. This is the critical test, and here the superintendent must decide for himself, according to conditions, what work is best helped by being let alone and what work is forwarded by direction. Wherever the general good comes into question, as in standards for promotion, attempts at classification, transfers from district to district, the use of a common text-book, necessary reports and records, there must be some common agreement. Every such agreement will partake of the nature of a compromise. It will not exactly suit the needs of any individual case because so many interests are involved. It will be, therefore, somewhat unsatisfactory in its application, but it is the best plan which can be agreed upon for the present.

Such must be the nature of the general plan of organization in a large system. The motto of the superintendent should always be that which has been adopted by the best teachers, that is, "the fewer rules, the better." He will content himself with the fewest possible general directions and allow the largest amount of personal liberty which is consistent with the general movement forward. Just here the teachers can help greatly to make the wheels of the organization run smoothly by recognizing the need of certain routine rules, and cheerfully following them. Such compliance involves no hardship to one who realizes that a general rule of practice is necessary, and that a thing which might not be advisable when the good of the single individual is considered, is often expedient when seeking the good of the whole. The broader outlook justifies the general plan.

The second element of the conference appears when the teacher presents her individual problem and the superintendent throws upon it the light of his general experience. He may do this by calling for a statement from other teachers similarly situated, un the complainant discovers that her question is not an individu one, but that it expresses the common difficulty. The discussi goes to prove the cause of the difficulty, the remedy which can applied and which has already proven effectual in other cases; or develops the fact that the problem is inherent in the nature of t work and will continue just so long as the work continues.

The result of such a discussion ought to be a larger view of t subject upon the part of the individual teacher, and new comfo and encouragement as well. If some other teacher has solved h problem, she profits by the experience of that other one. If all the teachers find the problem a perpetual one, she is comforted an takes up her burden, knowing that she shares the common lo Meanwhile, the superintendent or principal, hearing the discussio realizes the difficulties which the teachers encounter, modifies h demands, and learns to expect that the working of his theory wi be tempered by the conditions of the school.

Through such conferences, the superintendent is enabled t modify the general direction so that it may suit the needs of actua practice. He also is prepared to present to the teachers the *commo* need, the *universal law.* Each is helped by the other, because eac contributes the results of his own experience.

The conferences to which we have referred, are not necessari mass meetings. The superintendent, if his work is not too gre may confer with the individual teachers in their class rooms, and this friendly relation, he may prove himself most helpful. Here h may say: "That exercise was fine. The lesson was well taught an the children have learned to think. I am glad to see such teac ing." Such a word of commendation will go far to "redeem weary year," and will bring the teacher to the next confere ready to learn something which will make her work better yet. it not true that the best work is accomplished by the superinten when his field is small enough to admit of such personal visi the school room, with time enough for friendly intercourse wi individual teacher?

Failing this, the grade meeting, or the district meeting the next best opportunity for the conference described. In t trict or the grade, the teachers all recognize the common con which point to a common interest, and here questions of de easily be discussed, the principle upon which they depend presented, the defects stated, and the remedy applied.

But neither the grade meeting nor the district meeting the element which is necessary to complete co-operation. trict is one of many, and the grade is but a stage in the s The teacher's clear vision will come when she returns t after seeing the work of other classes, and discusses the of her district after realizing the needs of a district w own. Therefore the grade meeting must be supplemented eneral meeting in which universal problems are presented ussed.

superintendent in the small town, or the principal in the stands in such relation to his teachers that he may work all these avenues and achieve success. The superintendent rger city, is limited by the magnitude of his work, and legate to the principals of the districts these happiest labors perintendent. But, by whatever name the director may be is chief duty is to present the work of many as one unit, e teachers display the work of the individual as contribut- e whole.

ever we may discuss the details, we come back to the under- inciple, that effective work is secured only through co-opera- d that the most important work of the superintendent is to is co-operation. He must lead his teachers to realize that ork of education, "no man liveth to himself;" that for suc- is own field, every teacher is dependent upon the experience s.

important problems of the school room will never be com- olved so long as human nature is human nature and children ren with different environments and changing conditions. her will always find room for the utmost tact and skill and ge in her field, be it little or great. But the good of the as a whole can only be secured by the co-operation of all k for the children. Our text should be the old word of the soldier: "If the Syrians be too strong for me, then thou lp me. but if the children of Ammon be too strong for thee, ill come and help thee."

so soon as we learn to discuss our work in this sort of tion, forgetting for the moment the personal sense of nent or failure, and studying our work as it is related to the f others, we shall achieve the solution of our common s. Knowing how great is the task confided to us, we shall e our limitations and work in the spirit of the disciple. will become our teacher, and tolerance our companion, and od of the children" will be our watchword.

The Teacher's Attitude In School Governmer

By Walter L. Hervey, Board of Examiners, New York City.

THE general attitude of the teacher toward his pupils is a mining factor in all school intercourse. The teacher's of conceiving the child, and himself, and their mutu tions is basal; it crops out in looks and tones and inflections, in words, and enters into "unconscious tuition" even if sup in conscious and formal instruction A general attitude lies than any particular rule of procedure; and when the two c the impulse having the under hold is likely to have the best The man who believes in his heart—or wherever may be the s his beliefs—that women and children are inferior to the adul will inevitably show traces of this belief, however much h wish—however much it may be to his interest—to preserve a tude of consideration and respect. This danger is partic great if he be in a post of authority, as husband, or fat teacher. On the other hand, the teacher who respects the who sees the manliness and the divinity that are wrapped him, and who feels a certain awe in his presence, as in the pr of one who is a possible superior, one who holds in his ha keys of the future, will find that attitude coming out in cou ways, some of which will be perceived and all of which will b

The deepest thing in a child is the striving to be himse very self. We sometimes refer to this as self-activity, som as individuality, *Wille zum Leben*, the "divine essence." have even called it total depravity. But by whatever name w it, we mean that something within the child that makes him t become what *he* is, the active germ of the new "kind of man' destined to be. This it is with which we have to deal in scho family government, and which we are likely to recognize as " ity," if we deal with it as its nature demands, or mista "depravity" if we attempt to cut across the grain. The firs great commandment to the teacher, therefore, is: *Respect that child which impels him to live his own life in his own way.* impulse may be blind and need to be enlightened; it may be ward and require curbing and guiding. But it is the original stuff and must be respected.

This respect for the child's personality is the spring of happy consequence in school-keeping and in character-bui By it the teacher is helped to distinguish between regul prompted by his convenience and those called for by the pupil good, between that which the teacher doesn't happen to like that which the child ought not to do, and so is helped to avoid raising futile issues. Through respect, the teacher is led to give the pupil enough choice, responsibility, freedom, to keep his will taut, instead of so restricting and cramping him as to make his will flabby and slack. And it is through cultivating in himself an attitude of respect that the teacher clearly sees that truth which is so often missed, that the more a will is ruled from without the less it can be ruled from within; that the more it is ruled from within the less it needs to be ruled from without, and that a will cannot in any true sense be ruled from without at all. For what the child does in building his character he must absolutely do for himself. The teacher may furnish materials, incentives, suggestions, "copy," but the one thing the teacher cannot do is to choose for the child or force the child to will. For even if the fortress does fall, to which you have laid siege and which you think you have taken by assault, you will find, if you look closely, that the commander of the fortress is not among your prisoners.

"How then can character be formed?" asks Herbart. "Character is inner stability, but how can a human being take root in himself, when he is not allowed to depend on anything, when you do not permit him to trust a single decision to his own will? In most cases it happens, that the youthful soul has in its depths a sacred corner into which you never penetrate, and in which, notwithstanding your rough treatment, it lives for itself, dreams, hopes, and evolves plans which will be tried at the first opportunity, and if successful, will base a character just on the very spot you did not know."

No teacher who holds to the maxim: "Respect every other will," can fail to welcome even stout opposition to his own views, provided only the opposition be honest and amenable to reason. A teacher of this type cannot crush the spirit of independent thinking and willing, for to do that would be not only to harm the child but to deny himself. Few things in educational science are more clearly established than this: That if a teacher or a parent makes a child knuckle under to him, the child is in danger of forming the habit of knuckling under, or, what is worse, pretending to knuckle under, to any one and every one; and that the boy who stands up for his belief, even though wrong, will, when experience and insight have clarified his judgment, still stand up for what he *then* belives. It is the standing up for one's self—for one's view of truth—right or wrong, that is the essence of courage. The function of the teacher, then, is not to break but to enlighten, not to stamp out but to spiritualize that power within the child that makes for self-hood. But it must be remembered that respect for the will is a very different thing from respect for opinions and ideas. Opinions change, ideas may be enriched and rectified, but when a will has lost its savor, wherewith shall it be salted?

I have thus far tried to show how an habitual attitude of respect on the part of the teacher for that which is central in the child's personalty not only helps to solve the problems of school government, but is an essential prerequisite to all success in the building of character. I now turn to the bearing of this attitude on society and on the teacher himself.

Society has a right to demand of the school, not merely that it deliver to each new generation the message of the past, but that it discover talent and develop originality, that it train up a race able to command as well as to obey; that it equip leaders; that it send forth men and women who have a message of their own, who are able to see with their own eyes, think their own thoughts, plan, create, be modern. Out in the world we demand of a lecturer that he tell us of what he himself has seen and done. We want nothing at second hand. We are coming to understand the spirit of Walt Whitman with his passion for being himself and expressing what he really was—a man of whom Lincoln said, "There goes a man." In art we want not merely the old masters but the new masters, some of whom may be seated before you—are seated before some teacher—brush in hand. All these precious individual gifts, this rich ore of human endowment, lie embedded in the school children. That these gifts are so often allowed to lie hidden, unsuspected, unsought, is a tragedy which is not less tragic because it is re-enacted with each succeeding generation. The true teacher regards himself as a prospector for human ore, and other things being equal, he succeeds in locating paying veins in proportion to his belief that the ore exists.

All these things—originality, individuality, character, society has a right to look for in the output of the schools, and if these things are not found, society may justly hold the teacher to a strict account. And though, in this country, our schools and their products have been too often taken as a matter of course and judged by false standards, a time of reckoning is inevitable. A regime of dead level, of uniformity, of machine-like action and output, of petty despotism, is as much out of place in this country as the reverse is foreign to the traditions of the Celestial Empire. The day is not far distant—in some quarters it has dawned already—when the people of America will demand schools in which the ruling spirit is a spirit of freedom, and when they will demand teachers able to discover capacity and to develop the power of self-direction and self-government among future citizens.

Finally, a proper attitude on the part of the teacher is not only due to the child and demanded by society, but it is obviously due to the teacher himself, since it concerns his authority among his pupils and his standing in the community.

For, in the first place, while it is clear that authority is the one thing the teacher can not lack (the teacher must speak as one ving authority, and he must act as one having authority), it is so beyond question that authority, for purposes of education, lies t primarily in physical force (as in a loud voice or terrifying own) or in mere prestige of office, but in the moral force that comes om moral worth. The teacher, for example, can control himself, ile the pupil cannot; therefore the teacher has authority over e pupil. The teacher has a richer experience of life and a deeper sight into human nature; therefore the pupil looks up to him as one having authority. The teacher knows a better way than that ken by the pupil, and he therefore has a right to insist on that ay, not because it is his, but because it is better, and the differnce in tone and attitude and result, between these two ways of insting is as marked as is the difference between evil and good.

And, further, if it be true, that there are schools where the acher who controls with a smile and a gentle motion is called a weak disciplinarian," while one who cries out mightily, "JOHN, T DOWN!" is counted a "good disciplinarian," such a condition doubtless bad enough for all concerned; but it is even worse for e teacher than for the pupil. For "John" can and does make mself a bomb-proof into which he retires until the storm is past; t for the teacher there is no escape, either in character or in repution. The epithet "teachery" is often flung at a certain type of chers, and justly. It is a term of reproach. It refers to a certain pellant something about the one so characterized that labels him not being "like folks." It smacks of petty patronizings and ndescensions and bullyings; and it suggests a tone, a bearing, an itude and a habit of mind such as might have been engendered constantly dealing with creatures regarded as weaker in mind d body; and it savors of the pride of seeming mastery in a small lm, a pride unseasoned by the saving salt of personal studies.

I have a suspicion that there are men out in the world, who, ether they confess it or not, and whether they are conscious of it not, have a certain mild contempt for the teaching profession, as mposed mostly of women (a most unreasonable ground, cernly,) and of men who prefer to deal with women and children her than to come off the rostrum and out from behind the desk and et full-grown men out in the world. There is, of course, ground this feeling only so far as the teacher misses the point of his lling. If he takes advantage of his office to tyrannize; he deserves be dubbed a weakling; but if he meets his pupils, and all der him in authority, as he would meet men, on equal terms, and he depends only on the moral forces of personality and reason for rking his will with them, he is not only worthy to be regarded a man among men (the term man being used in its generic sense), t he is also worthy of that to which the man on the street can never pire—the honor which all men unite in paying to the teacher who also a man.

Discipline In The Upper Grades.

By John Roberts, Instructor Boys' High School, New York.

IT is conceded on all sides that to write on discipline is muc easier than to take charge of a class of forty or fifty childre and to discipline them, just as it is far simpler to state how subject should be taught than to teach that subject in the particula way described. And for this reason the writer fears that those wh attempt to enlighten others in regard to discipline are likely t have the proverb: "Practice what you preach," sounded in thei ears to perhaps their personal discomfort. But the importance o good order, no matter from what standpoint it is viewed, is s great, especially in schools containing pupils of many differen nationalities and surrounded by widely different kinds of hom influence, that it seems as if too much can not be said on this subject. Of course it is true that more is needed to make a goo teacher than the ability to discipline, but it is just as true that h who lacks this power and still essays to teach is doomed to failur no matter how successful he may be in other lines.

Those who are required to manage large classes of young children, many of whom know very little English, who are the offsprin of parents understanding still less about the customs and institutions of the country, assuredly have a very trying task, and i would be unwise in the extreme to attempt to formulate a set o general rules applicable to their work. But when the scholars hav become older and average 11 years of age and over, the problem though not necessarily easier, is more readily brought within th scope of general considerations. The classes are more homogeneous the scholars have more intelligence, more thoughts and feelings i common, and are usually more amenable to reason.

When Herbert Spencer attempted to decide what knowledge i of most worth, he inquired first into the aims and objects of knowledge. Likewise, it is proper for us, in our attempt to determin the highest type of school government, to see in what the value an objects of discipline consist. First of all, however, the mind shoul be disabused of some of the ideas that seem to cling to the ter discipline, no matter in what connection it is employed. The us of the word in military circles is the probable reason for the fac that it is frequently considered to mean strictness, severity an machine-like regularity in doing work. A moment's consideratio

ll show that such ideas are not necessarily implied. There is dis-
line in an audience listening to a lecture, in a number of drivers
recting teams on a crowded road, and in a bicycle club taking a
ib run. We must, then, agree that good discipline is not incom-
tible with freedom and independence; indeed, that the best dis-
pline is that which guarantees the highest degree of freedom and
dependence within proper and easily determined limits.

Bearing this in mind, it will be seen that the value of discipline
twofold.

Looked at from a purely practical point of view, discipline is
e force that makes possible the existence of a school. Children
varm into a building from many different neighborhoods; they are
different sizes, ages, tendencies and habits; different influences,
oth of heredity and environment, have been at work. In a very
iort space of time they become quiet and orderly, and pursue their
udies cheerfully. Proper management has transformed that mob
ito a well organized body. Such conditions existing in a school-
om, relieve the teacher of half his burden; their absence makes
aching the most trying, nerve-destroying work imaginable.

One object of discipline then is to enable the teacher and
holars to do their work from day to day, to have lessons, assem-
ies, and dismissals conducted with the least possible delay, fric-
on and noise.

2. But the second object of discipline is much more important
id far-reaching. Were our schools to do nothing more for moral
velopment than what has just been mentioned, they would fall
r short of performing their highest functions. From the relation
which they stand to parents and pupils, the schools can be a pow-
ful agency in the development of that good order and good con-
ict which continue to guide action long after the school career has
rminated.

Of the scholars who reach the higher grades, comparatively few
to the high schools or colleges. Instead, they enter business, are
irown into social contact with others, and are judged not by what
iey were in school but by what they are now in real life. Their
anners, their way of speaking and of conducting themselves, their
lf-control and self-possession, are the qualities which make them
esirable or undesirable members of society. If they can keep
ieir passions and tempers under control and can act in what the
orld calls a gentlemanly manner, their future value to the com-
unity is assured. The end of discipline from this standpoint is
urely a moral one. The aim is to have the child grow up a tower
f moral strength; not one who behaves well when some one is
atching and relaxes into disorder the moment the guardian eye is
irned away, not one who is regardless of the rights and feelings of
thers; but one in whom the correct ideas of right and wrong have
een implanted and have taken such firm root that, no matter

amidst what circumstances the boy or girl may be placed, the sense of duty will offer an unfailing means of support.

Formation of character goes on continually; every subject in the curriculum contributes at least a modicum toward this end; every word of the teacher as well as every prominent trait of his own character, has some influence on some of those in his charge.

These considerations illustrate what may be termed the social side of education.

In the light of these remarks the task of deciding what discipline is the most desirable becomes quite simple. The best form of government is that which demands rational, normal action. The pupils should sit in rational positions, they should talk quietly and naturally when reciting. The schoolroom should not have an air of excessive formality. The recitation should not be conducted in whispers nor in a declamatory style. There should be nothing stiff, formal, nor conventional. To some teachers the class-room is a place where habitual modes of action must be put aside; where a new tone of voice, a new attitude, a new manner of walking and sitting must be observed not only by the pupils but by themselves.

Just as a superintendent would judge the work in instruction by the regular day-in-and-out sets of papers, rather than by specially prepared ones, so the workin management should be criticised by the degree of ease and naturalness with which the scholars work.

To an observer no disciplining should be apparent. Each topic should be taken up, questions asked and answered without the slightest interruption for order. Frequently, before the scholar reciting has had time to answer, we are obliged to attend to one who has spoken; then when another question is being considered, some one, (perhaps, indeed, it is the same culprit), drops a knife and then there is another delay. Such a recitation is likely to proceed in fits and starts. It calls to mind the thought of a ride on an uneven country when an obstreperous mule is the motive power. For a few minutes all is comparatively pleasant; then a snag is struck and some time must be employed in setting matters to rights. Once more the party moves on, enjoying the beautiful scenery, until suddenly a new obstacle is encountered and again a halt ensues. A ride of that description would hardly be called enjoyable. The constant dread that something may happen, coupled with the necessity of occupying our attention with other things, has deprived us of the opportunity of recreation. So, a recitation carried on amidst an incessant fire of admonitions to sit still, stop talking, pay attention, etc., is, to put it mildly, not beneficial. These digressions exasperate the better scholars, distract attention, break the chain of thought, and cause a general feeling of unrest and uneasiness. Nothing is more destructive of the good-fellowship that should prevail between teacher and scholar, nor more injurious to proper conduct of our work. A skilful teacher can conduct a series of lessons in which nothing is spoken of nor thought of but the subject in hand. Proper treatment cannot be given unless the lesson is practically free from all extraneous matters; and in the higher classes at least, we should try to make discipline an extraneous matter while the actual school work is being considered. In the words of Edgar Dubs Shimer, Associate Superintendent of Schools, "the work of the teacher should be along one line, namely, that of instruction. There should be no undue digression to hold attention or to preserve order. Both the teacher and the pupil should be intent on the development of the subject in hand; when the class has reached this point most of the discipline will take care of itself."

A classification of the different kinds of discipline is well-nigh impossible, because there are as many kinds as there are types of instructors. But as a general rule it will be found that wide deviations from the normal line laid down as our standard will result in the discipline being either too easy or too severe. Either form is likely to be injurious and to become more so as its deviation becomes greater.

One kind is too loose, too indefinite; it does not hold the scholars to their tasks; it fixes no responsibility and does not inculcate right habits and principles of conduct. Looked at from the point of view of lessons, this method does not obtain results commensurate with the amount of labor expended. The scholars are apt to be noisy and indolent; their copy books will be written carelessly and hastily, and their compositions will show little attention to arrangement and punctuation; their drawings will not be neat and their arithmetic examples will contain mistakes that a little forethought would have prevented. There may not be any gross disorder; the teacher is not by any means deficient, but the class lacks that quiet, orderly air that one would expect to find in a well-regulated class.

The other form is too strict, too austere; it gives the room an air of general rigor. The pupils sit, talk, and act as if the thread-suspended sword were hanging over their heads, ready to fall at any moment. Such discipline approaches a limit of repression that is very harmful. It produces fear and hatred and banishes good-feeling and friendship. Viewed from the scholastic point, it may kill, it certainly will curb, independent thinking and inquiry while it prevents the growth of intellectual sympathy between pupil and teacher.

Discipline, then, should be regulated by what is judged to be the proper, rational conduct of pupils under the circumstances. Over-severity should be guarded against as much as laxity. Do not be too strict, but at the same time be uncompromising when acts of disorder do occur. The voice that always shouts loses its influence, the hand that is always heavy loses its effect. On the other hand do not become what has been termed "a well-meaning failure Kindness of heart is indispensible, but when there is nothing b kindness the result will be disastrous. The more disorder the ave age boy can indulge in with impunity the more disorder there w be. The saddest sight in the school-room is that of a teacher wh is failing simply because he is over-indulgent. This is sad, pe haps, because a little more stamina, would make him a success.

To strike the mean of these extreme methods will require a the patience, fore-thought, and tact, that the average teacher po sesses. This, however, need afford no cause for discourageme because it is always difficult to find the "golden mean" in any li of action or thought. To be courageous throughout life witho allowing courage to develop into foolhardiness on the one hand to sink into cowardice on the other, to be hopeful in the final ou come of things without becoming presumptuous, or despairing, h tried the genius of the world's greatest statesmen and thinker Man has been on earth for thousands of years and has toiled da after day only to find that his endeavor to escape one set of dange has led him into another.

But when we, in our sphere, have attained or nearly attaine our aim, it will be found that the result repays its cost. The we and tear of our daily routine vanishes, the class-room is quie peaceful, and pleasant to all concerned. Most of the governing being done by the pupils whether or not they are conscious of th fact. The class is no longer an example of the power of one ind vidual to control others, but rather an example of the ability children to co-operate for their own good. Instead of being anta onistic, they will support the teacher in every effort that aims their improvement; an appeal to their better nature seldom fails prevent the recurrence of an offense. In the words of a well-know educator, "all who have to deal with children whether those of th rich or of the poor, the promising or the unpromising, need to fin that method of approach that touches the heart, kindles the fee ings, illumines the understanding, arouses ambition, and final strengthens the will and establishes a new life."

On Utilizing The Possibilities Of Self-Government In The Class Room.

By George J. Smith, Board of Examiners, New York City.

WE read in such books as the well-known and admirable story of "Tom Brown's Schooldays" and George Meredith's delightful "Adventures of Harry Richmond," or the same author's inimitable "Lord Ormont and his Aminta," what fine fellows the head-boys in an English school may be, and how great may be their influence for good over the other boys. It has long seemed to me that teachers in America could get from a consideration of this feature of English schools a suggestion valuable for the uplifting of our own. If the pictures of English school life which we find in such books as I have referred to are at all veracious, there is in actual operation in these schools a system and a spirit of generous emulation, openly incentive to manliness and honor, that seem to be elements so invaluable in school life that the absence of them should appear little less than a calamity. The older or head boys in English schools become the heroes and exemplars of their fellows. They are designated by the natural selection which springs from the boys' instinctive admiration of the manly and the true; and they exercise consciously and unconsciously, an influence doubly-elevating to the discipline, and, yet more important, to the tone of the school, an influence not merely negative, in restraint of unworthy acts and words, but positive, through the boys' unquestioning imitation of admired models of conduct and demeanor.

Of course it must be granted that the conditions are very different in our public schools; for they were boys' boarding schools that Tom Brown and Harry Richmond attended, and the boys of all ages were constantly thrown together in their sports and their other pursuits of the leisure hours and the holidays. These conditions are vastly more favorable to the establishment of lasting and influential leaderships among the boys, and to the development of that invaluable thing we call *esprit de corps*. Besides this, the English schools are nourished on centuries of tradition, and they respire a historic atmosphere. As for our public schools, not only are they without reverend tradition, but the other conditions are also different. The out-of-school relations of the pupils are reduced to a minimum, and in the school itself the children are assorted, as regards age and ability, into pretty uniform lots or grades, in whicl the range of difference in ability and commandingness is narrow.

Nevertheless, in any class, however closely a school may b graded, there are differences—there are the leaders and the led. refer now not so much to differences in studiousness or in menta ability, as to differences in influentialness and in quality of commanding the respect and personal admiration of the members of th class. Every teacher recognizes these differences, and the skillfu teacher must recognize their importance.

Is it not safe to affirm that the successful teacher must tak advantage of these differences in personal forcefulness, whicl appear in the class? The teacher cannot afford to fail in winnin to his purposes the commanding element in the school. In class management, in its true sense, there seems hardly anything mor important than skill in directing the possibilities of what may b called inter-influence. Says Dr. Albert Shaw in an article to whicl I shall refer later:

"One of the greatest practical difficulties under ordinary circumstances in maintaining good school government arises from th fact that the best sentiment of the school is of so little practical us on the side of the governing authority."

To get that "best sentiment" on the side of the teacher mean real and willing co-operation of pupils with teacher for the bes purposes of the class-room. If the teacher makes himself felt, no so much directly, on the class as a whole, as indirectly, througl the more influential members of the class, the gain is twofold: no only is the teacher's burden lessened, but the increase in the heart willingness to strive and serve, in the spirit of responsibility an moral sense, and in manliness and womanliness in the class-room, i an advantage beyond computation.

As matters stand in most American schools, the democrati principle of self-government has almost no play at all; the principle that obtains is that of benevolent despotism, and even agains despots the most benevolent there is a temptation to commit *lèse majesté*. Under these circumstances, even the best disposed element among the pupils has little or no sense of responsibility fo the behavior or the repute of the school, and is of small positiv value to the teacher in maintaining a high standard of conduct The best disposed members of a school, furthermore, are by n means always the most influential.

But the teacher who can win to himself the strongest personalities among his pupils has in effect won the whole school. The become, as it were, his unofficial ministers. They respect and protect his honor and his authority, and the school, if still a despotism is a disguised and inoffensive despotism. The iron hand is gloved and therefore needs less apparently to control, and controls all th more efficiently. Nor is such class-management through the natura leaders of the class successful merely in the narrow field of school government. By virtue of their very position as fellow-members in the class these leading spirits can do much that the best teacher can hardly do, in the way of creating and maintaining a fine, manly, and honorable tone in the school. They make a "moral education" (too often a merely theoretical matter) in some sort a living actuality.

What is the situation of the teacher who neglects or fails to attain this partial self-management of the class? He is strong enough to control, or he fails to control. If he fails, it is because of the indifference or the opposition which he had not skill or tact enough to forestall. And if he maintains control, all of it comes from himself. He is the unreplenished source, the unaided upholder of the standard of conduct. What is the result of this? The teacher daily feels virtue depart out of him. His vital batteries are daily depleted. The teacher rules through authority, and the children obey through awe or fear. This is no imaginary situation. It is too frequently the actual one. The willing, cheerful, co-operative, self-respecting attitude, which ought to characterize the pupils in a school, is sadly absent, and the atmosphere of repression sickens the generous, hearty, healthy impulses of childhood, that might so easily have been turned into expressions of active helpfulness and the blessed cheerfulness of being and doing good for the love of goodness, and of the teacher whose uplifting influence is felt, though not obtruded.

Can any practical suggestion be given as to how the teacher may learn to create in the school an atmosphere of willing and happy obedience to the true objects of school life? If we need, in an increased degree, to make active for the best ends the leadership of the commanding element among the pupils, how can this be done in schools so different in system from the schools of Tom Brown and Heriot and the Matey Weyburn whom we are tempted so little to blame for appropriating Lord Ormont's Aminta?

I would not be thought to evade the question, when I say that the teacher equipped with a fit personality will solve this problem as surely as he once sets to work upon it. It may take time, especially in some difficult schools, but the teacher of tact and of personal force will need only to study his school. He will need only to recognize who are the real leaders in influence in the school; his instinct will tell him to win those leaders, and his tact will tell him how to win them. Yet certain conditions, more or less obtainable, I may suggest:

In order to win the respect of the leaders of the school-*esprit*, the teacher must be, and must be known to be, worthy of respect for his own personal qualities. It is for this reason that the winning over of his school is a certain test of the teacher's own manliness or womanliness. The existence of an open, honorable, emulative, healthily cheerful spirit in a school is the best proof of the teacher's being a real man or a true woman. As the teacher is, so is the school.

In the second place, the teacher must win certain pupils through their actual interests, with which he can sincerely sympathize. These interests are largely out-of-school concerns or activities, but the wise teacher, who appreciates his calling, will by no means imagine that his interest and his influence should be bounded by the school walls. His sympathies should be as catholic as life. But pretended sympathy, or even genuine sympathy that seems pretended or forced, is an impertinence. If the teacher is not broad enough and deep enough to care honestly and unaffectedly for what really interests his boys and girls, he will hardly win some of them, who are the most important for him to win.

Finally, as probably many teachers in this city know, there is the plan of what is known as the school city, a very interesting and valuable account of which is given in the December number of the *Review of Reviews* (1899). I believe, on the one hand, that this scheme, (to organize in the school a sort of miniature community-government, recognizing the democratic principles of self-rule and of citizen-responsibility), might, especially in grammar and primary schools, easily be made too formal and carried too far. But on the other hand, as any reader of the article mentioned will be ready to admit, there is in the plan much of signal value, both from the standpoint of patriotism and preparation for citizenship, and from that of school-management. Gradually introduced, and well supervised by a capable teacher, the school-city plan should and I think would work out admirable results.

The plan in question is merely a systematized and formal employment of the principle I have dwelt upon in this paper. That principle, of the teacher's making practical use of the influence, in the class, of the leading personalities of the class, for the uplifting of the tone and of the morale of the school, is, I repeat, one that is too much neglected and ignored in American schools; or, if here and there made use of, it is so recognized in a vague and partially avowed way. In the organized school-city, to which I have referred, the elected leaders serve as mayor, magistrate, or the like; in some schools certain boys are elected as class-captains, and develop in a remarkable degree qualities of responsibility and of actual control of their mates in the absence of the teacher. But, even if the teacher prefers to have the leading personalities in his school less formally or officially recognized as such, there remain large possibilities for the tactful teacher to use their influence for the highest purposes he has at heart. I believe that experiments along this line would be fruitful in good results, inuring not only to the teacher's relief and satisfaction, but to the most essential well-being of the school.

The Maintenance Of Government Through Instruction.

By Charles H. Judd, Professor of Physiological and Experimental Psychology, School of Pedagogy, New York University.

THE term government, in whatever connection it is used, always arouses in the mind the idea of restrictive control. Indeed, unless there is some inharmonious factor in the situation which needs to be suppressed or controlled to some degree in its action, there is no reason for the maintenance of any form of government whatever. When now, we contrast this idea of restriction which is contained in the general notion of government with the idea of positive, constructive energy which is contained in the notion of instruction, we shall be impressed, first of all, with the opposition rather than with the intimate relation between these two phases of the teacher's activities. In instruction the teacher is aiming to encourage the further development of certain tendencies and abilities which nature has given to the child. In government, on the other hand, the teacher is striving to suppress certain tendencies which are in opposition to those lines of development which he regards as proper for the child to follow.

A little closer examination will, however, show us that the apparent absence of relation between government and instruction is not so radical as it seemed at first sight to be. The only standard by which it is possible for the teacher to determine what tendencies shall be suppressed, are the standards which he has set up in his own mind for the guidance of the child's positive development, that is for instruction. If now, there should be any error in the teacher's judgment as to what are the proper lines of development for the child to follow he might be misled through this error into the mistake of regarding as harmful and worthy of suppression, certain tendencies which are in reality quite natural and legitimate. Evidently, then, the adoption of a proper course of instruction is the necessary antecedent to the determination of the proper mode of school government. And the question which should arise in the mind of every teacher before he exercises any form of restrictive control is this: "Is this tendency which I am about to suppress in the child one which is really harmful to his highest development, or is it merely one which does not fit into the artificial scheme of instruction which I have accepted"?

When the teacher frankly presents the situation to himself in this way, he will undoubtedly find that in many cases the inh monious factor which makes government necessary is himself a not the child. Particularly should the teacher be prepared examine closely his own attitude whenever he finds that a cert tendency in all of the children who are under his charge sho great vitality, coming again and again to the surface in spite of persistent efforts to suppress it. The modern scientific attitu toward such a persistent tendency is quite different from t which frequently obtained in former times. There have be periods in which nearly all of the natural tendencies which ha shown themselves in the child's life have been included under t catagory established by the doctrine of original sin. It was enou to brand an act as harmful that it was the act to which the in vidual was prompted by his natural inclination. In such peri the more the child persisted in developing along a certain line t more strenuously was he opposed through the restrictive control school government. But biology has shown us that it is only t useful tendencies which become thoroughly established and capable of surviving long and vigorous opposition. When, acco ingly, we find a tendency which thus persistently reasserts itse we are gradually coming to look upon it with respect rather th with contempt.

One of the tendencies which school government has alw been engaged in attempting to suppress is the tendency towa bodily movement or what is frequently called "restlessness" on t part of the children. There has always been a feeling on the p of teachers that this tendency is in direct opposition to the dema of rational instruction. The question which we have to propose this time is the question which has already been suggested in t preceding paragraph. Is it not possible that the child is h giving expression to a natural and necessary demand of his nat which has not been properly provided for in the course of instr tion given in the schools? The answer to this question if sought in the light of facts which have been ascertained in the sciences psychology and biology and in view of the practical results whi have been obtained through a modification in the policy of instr tion in certain quarters, will certainly be an answer which w throw the burden of error on the mode of instruction rather than the child.

The testimony of psychology is unequivocally in support the general principle that mental life is quite impossible witho bodily movement as well as sensory stimulation. A suppression bodily movements in one direction does not mean a complete su pression of these movements so long as conscious life contin but merely a turning of them into other channels. And si movements are among the essential conditions of mental life t nature of ideas will be influenced by the direction into which t bodily movements are turned. Thus, if the only movement which is allowed a child during his acquisition of an idea be a movement of articulation, the idea which he will gain will be just as surely verbal, and only verbal in character. The widening of the scope of ideas can be gained, accordingly, only by a widening of the range of bodily activity which is permitted while acquiring it.

In the second place biology has made it clear that bodily movements are not mere accidental and unessential concomitants of mental life. They are rather the ends toward which all mental activity is directed. For it is through bodily activities that the individual is able to modify his relations toward his environment, and to adapt himself more and more fully to that environment. Sight and hearing, taste, smell and touch, are given to the child as the means by which he may receive from his environment the signals that shall make possible proper reaction on his part. Training which neglects this fundamental relation of cognition to activity, and attempts to develop knowledge as something apart from reaction, loses sight of the principles of development which are becoming more and more thoroughly established every day in the biological sciences.

An excellent illustration of the recognition which this biological attitude is certain to gain in remodeling our courses of instruction is to be found in the lengthy studies which are being made in many quarters of the natural modes of instruction seen in the play of children and young animals. It is perfectly obvious that in this play activity there is being developed in the child or young animal a better adaptation to the practical environment which must be dealt with in later life. Nature has not estatblished a tendency to this form of action merely for the purpose of allowing energy to go to waste. Nor are the activities of play undertaken merely for the gratification of momentary desires. Through these activites the developing individual is gaining control of the numerous possibilities of adjustment and adaptation which are present in his own organism. And he is learning by actual contact and manipulation the characteristics of a great many of the objects of his environments. The intense interest which children show in play has sometimes been explained by saying that play gratifies the emotional nature. But when one remembers that children will frequently subject themselves to conditions which are decidedly unpleasureable in order to gain the end of some interesting game, he will be convinced that the intense interest in play arises not so much from its mere agreeableness as from the fact that play absorbs all of the child's functions so fully that there is no distracting tendency present. A mode of absorption which is not dependent upon emotional gratification but rather upon upon the preoccupation of all of the child's functions is thus offered to us in the model form of instruction devised by nature.

The adoption of the suggestion from the various sources which have been mentioned and the formulation of a course of instruction which shall do away with the necessity of much of our school government is a practical problem, the difficulty of which can certainly not be overlooked. Indeed, the effort has already been made in many quarters to so modify school-room work as to make it more comprehensive and natural. In some cases these efforts have failed of satisfactory results because of a lack of proper discrimination between that which is in compliance with the child's desires and that which is in compliance with his rational tendencies.. A child's desire is always special in its character and is directed towards some single object. It is the outcome of the natural tendency to action but its special direction may be the result of momentary caprice. The fact that the teacher cannot allow the child to follow the momentary caprice does not mean that it is necessary for him to suppress the whole tendency toward action. Nor, on the other hand, does it mean that a full recognition of the naturalness and legitimacy of the tendency is possible only through a concession to the momentary caprice. There must be a sharp discrimination between the general tendency to act and the special tendency to act in a particular direction.

When this distinction is lost sight of there are two possible mistakes which may be made, and that these two possible mistakes have frequently been committed will be obvious to any one who has even a superficial acquaintance with the history and present conditions of pedagogical practice. Either the course of instruction will ignore both the natural tendency and the momentary caprice, or it will degenerate to the level of mere amusement in response to the child's desires. When, on the other hand, the distinction is carefully drawn, the teacher will see that it is quite possible to make use of the general tendency by controlling and directing its special line of application. Indeed, it is just at this point that we find characteristics which serve to differentiate carefully planned and systematic instruction from the irregular kind of instruction gained in mere play. The teacher's control serves to hasten the child's development and to render it more economical by placing before the child important and advantageous ends of action rather than the frivolous ends which would too frequently suggest themselves if the child were left to his own resources.

Instruction of a type advocated will be of interest to the child exactly as play is interesting, not because it gratifies the emotional nature but because it occupies all of the child's functions. It will be more conducive to the child's development because it is systematized. It will be natural because it recognizes his tendency to action, and will, for this reason, do away with much of the restraining control of school government which is now necessary rder to suppress tendencies not provided for in the course of ruction.

The practical carrying out of the suggestions which have been le undoubtedly calls for careful management and judicious con- atism. It is certainly not possible to introduce in a moment lifications in the course of instruction as complete as those that ld be necessary for a full adoption of all that has been advo- d, but a beginning may be made, and fortunately has already n made in many quarters. In the first place a teacher may uire a spirit of tolerance towards the natural tendency of chil- n to be active, and in that spirit of tolerance he may provide hout any great change in the character of his instruction some- g which shall be suited to keep the child preoccupied without racting him from the work of the class. A form of military dis- ine may be devised of such a kind as to cultivate the child's rest and pride in precise and regular movements to an extent t will make it possible to overcome to a very large extent, his ural restlessness. This form of occupation of the child's mus- is not to be indiscriminately condemned. It is far better than renuous mode of mere suppression of movement which had not n the justification of arousing the child's natural pride or will- ness to enter into equal competition with his companions. But s mode of absorbing the child's tendencies toward movement altogether negative so far as the matter of instruction is con- ned. It prevents his tendency toward movement from inter- ing with the learning of his lessons; it does not make this dency directly tributary to his mental development.

A more advanced stage will be reached when the teacher adds his tolerance for the child's restlessness and his willingness to ish it with an outlet, a desire to use this tendency as an aid to ruction. The teacher will then see that he must give the action e definite application to the object about which the child is ning. One of the easiest ways to accomplish this is through a ivation of the child's natural desire to draw. A knowledge of spacial attributes of objects is highly essential to a developed wledge of those objects. And a cultivation of the ability to v accurately and readily will serve on the purely cognitive side important purpose of rendering knowledge complete and accur- On the side of the reaction, it will furnish a means of utilizing child's natural tendencies toward activity in an economical way in a manner which serves to apply them directly to the special ect of instruction.

The practical suggestions which have been made thus far call no radical change in the equipment of schools. They do call a certain ability on the part of the teacher that is unfortunately, quently wanting. This lack in the teacher's equipment is itself fault of the present system of school instruction; it would disappear with the change of the system itself. The period durin which the change is being brought about will, of course, call fo special energy and special devotion on the part of those who ar forced by private endeavor to bring about the general change.

Finally, if the lines of reform suggested were once followe there would undoubtedly result gradually, a much more radic change in the system of instruction than that which has bee explicitly outlined. Indeed, in those quarters in which anythi like the modifications here advocated have already been introduce practical experience has so fully justified the new line of departu that it has rapidly increased in general acceptability and has sho sufficient vitality to extend itself into many other realms of bodi activity, and to make themselves directly tributary to the work instruction.

Order And Disorder.

By L. Seeley, Professor of Pedagogy, State Normal School, Trenton, N. J.

SUPERINTENDENT BERTRAM, of Berlin, who came to this country in 1893, as the royal representative of Prussia, at the Columbian Exposition for the purpose of studying American Education, said to me, as the result of his observations, "There are three things in American Education that profoundly impressed me. 1. The liberty which the teachers have to try new experiments; 2, the working libraries to be found in connection with every school, and 3, the superior discipline."

The first two of these points have nothing to do with my subject, but I confess that the third point was a suprising admission to be made by a Prussian educator.

I was familiar with the German idea of school discipline, the rigid, unquestioning, military discipline, which is so manifest in the schoolroom, and which is so thoroughly typical of German life. Therefore it was a suprise to me to hear the above opinion from a man who had been brought up and lived all his life under these influences. And it was a matter of some pride to me that so eminent an authority as Dr. Bertram should discover that the lusty young nation across the sea could teach Germany something in education.

Accordingly I asked the Superintendent to tell me just what he meant by discipline. His reply, which I shall give in my own words, opened my eyes to a larger view of the subject of discipline than I had heretofore had, and led me to feel more confident that we are working on right lines in this matter. He spoke of the perfect self-command of the pupils that he had witnessed in schools that he had visited, notably, I remember, of the students in the New York Normal College. He thought that our children are being taught self-control in the school, and this power shows itself in a remarkable degree in life. He was at the Exposition on "Chicago day," when seven hundred and fifty thousand people passed through the gates, probably the largest number of people gathered together, in one mass, in the history of the world. He witnessed the great crowds carried by the Illinois Central Railroad, by the cable cars, by the elevated trains, "And yet," said he, "there was not a single jam that I noticed during the whole day." "Why," he further added, "with us, if four or five people wanted to get upon a street car there would be a jam." What higher compliment to this phase of our education could any one pay? Doubtless there are

other factors that have contributed to this result which Dr. Be
tram did not take into account. Our theory of government "Go
ernment of the people, by the people, for the people," as Linco
puts it, has a great deal to do in developing self-control. Tl
recognition of social equality would be another factor, for the
would be no inordinate fear on the part of any one that to yield pr
cedence on a street-car means destruction of social precedenc
Perhaps most of all, is the absence of paternalism in our order
things in America. Here every man is expected to take care
himself or take the consequences. In Germany he is to be take
care of, to be prevented from running into danger. This is a stroı
factor in the development of self-control.

Now, if the above ends have already been reached, we are ce
tainly tending in the right direction in school discipline. Educ
tion must prepare for life, and if the teacher in our schools h
such a view of her work that she does not maintain order merely
"hold things together" and remain mistress of the situation f
each session of school, but to make self-reliant, law-abiding, polit
self-controlled men and women, then that teacher is workiı
towards a right ideal.

It is for the purpose of helping teachers in this important woı
that I address them on the subject of *Order and Disorder.* I desi
to be plain and practical and therefore I may be excused for usiı
concrete examples. Every one knows that the maintenance of go
order in the school causes the most serious apprehension to the youı
teacher. The schoolroom would be heaven to the enthusiast
teacher if it were not that human nature manifests itself, often
its worst form. It is not lack of knowledge, bad methods of instru
tion, or want of the true spirit of the teacher that attracts chi
attention on the part of the superintendent or school board, b
inability to keep order. This is the rock on which many a teach
shipwrecks. And there does not seem to be anything in our scher
for the preparation of teachers that quite fortifies them against th
danger. In their practice work they are sustained more or less l
the influence, if not the presence, of the critic or the regular teache
Their work in theory gives them a foundation that will
most helpful when they are established, but when they begin, it
like being dropped into the middle of the sea and told to sink
swim, or like being placed at the rudder of a ship the first time th
step aboard. Lectures on swimming, or a previous study of na
gation will help in the end, but at first the novice is bewildered aı
ignorant of what to do.

I think many make a mistake in not understanding what
good order and what is disorder. By a series of negative and aff
mative propositions I shall try to make the difference clear.

1. *Order does not mean absolute stillness.* It does sometim
mean just that. For instance, during the morning exercises, wh

the teacher or some one else addresses the school, or when perfect silence is demanded. We have a notion in this country that to require a child to sit still is repression, that it will destroy the "young America" in him. Now I love the spirit of freedom that characterizes the American youth which the very atmosphere of our land fosters. That is the spirit that Dr. Bertram discovered. But there is a species of so-called "young Americanism" that I do not like. This shows itself, among other ways, in the nuisance that children often make of themselves in church, or at other public gatherings. Not many years ago there sat just in front of me in church, a boy of nine or ten who was in a constant wiggle and squirm. He would open a hymn book, turn its leaves, drop it on the floor, pick it up, put it in the rack—but I do not need to go on, all of my readers have been through a like experience. I remonstrated with him in a mild way at the close of service one Sunday and his father was actually indignant that I thought these youthful activities should be repressed. The boy took the hint, however, and there was no further trouble, proving that his actions were not at all necessary and that none of his natural rights had been abridged. And if they had, some fifty other people sitting around him had rights, too. Now, that boy needed to be taught to sit still and the school ought to have taught him that lesson as essential to good order.

But there are only a few times in the day when absolute stillness is necessary. I once knew a teacher who prided herself on being able to hear a pin drop at any time of the day. Now I do not think she had good order. It was painful, repressive and wholly needless. A certain amount of noise indicates work. While the engine is running, when the wheels are turning, when the mill is grinding, when the carpenter is sawing there is noise, but it is not disorder; it does not disturb. But let some machine break, let the carpenter while sawing strike a nail and there is noise; that is disorder. Every mother knows that too profound a stillness in the nursery is ominous. The teacher should train herself not to be disturbed by a proper amount of noise in her schoolroom, but to be at once alert when the noise is of the wrong kind, just as the miller will awake out of a sound sleep when the grain has run out of the hopper, not because there is more or less noise but because it is of the wrong kind. So good order in the schoolroom cannot be defined as the absence of noise.

2. *Good order does not imply a formal position of the body.* And yet it does sometimes require just that. When a boy stands to recite, he should stand erect in a manly way until he has finished what he has to say. Too much stress cannot be laid on this point. There is a close connection between loose physical conditions and loose thoughts, loose knowledge, loose expression. I saw a squad of young men in Berlin one October morning, new recruits for the

army, who had just been brought in from the country. They were crooked and bent, awkward and ungainly, showing the effects of hard labor on the farm and in the workshop. A few days after I saw them having their first drill at Potsdam. A more comical exhibition I never saw as the officer put them through the drill. Six months later I saw them again transformed into soldiers fit to do service in His Majesty's army. With the erect body, the precise movement, the soldierly bearing, there had come alertness of mind, and quickness of perception, self-respect. So when the boy is required to stand erect or sit properly he is gaining the self-command that freedom which is education. Good order certainly means conformity to the above idea.

But this is only an incident in the school work, though an important one. I have visited a great many German schools and I have always found the children sitting erect with their hands meekly folded, until the teacher asks a question, when those who know raise one finger. It should be mentioned in passing, that the children do not have study periods, as with us, but all of the periods of the day are given to instruction. Now I do not want any such idea of order as that in our schools. That is repression. I have seen teachers who seemed to think that their room was in bad order if the pupils were not sitting erect. I think that just as the carpenter bends his body to the board he is planing, just as the horse shoer must place himself so as best to do his task, just as any workman must suit the position of the body to the work in hand, so the pupils must be at liberty to choose the position of their bodies in order to best do their work. Let no teacher be disturbed then, if her pupils are not sitting erect at their work, and let no inspector find fault with the teacher who does not insist upon formal positions during regular work, provided the pupils are busy and interested in their work, and provided the positions taken are not uncouth and unhealthful.

3. *Good order does not require the teacher to see every piece of innocent mischief.*

The teacher must not forget that her charge are children full of life and brimming with fun. This is the natural instinct of childhood, and every one delights to see it. Without this spirit the physical, mental and moral powers would stagnate. Only it must not be allowed to go too far. Each individual teacher must decide how far mischief may go and not become dangerous, may pass the bounds of innocence. It is like driving a spirited horse. The horse may go at a rapid pace, but if he yields to the tightening rein and obeys the word of command, there is safety. If he takes the bit in his teeth and goes at will, there is danger because control is lost, even though the pace may not be fast. So the teacher may allow liberty to her pupils, just so far as she can do so without feeling that they are running away with her. There is a difference in teachers in this respect, just as there is a difference in drivers. Each must know her own power and exercise it in time to prevent dis-disaster.

I have known teachers to make themselves and their pupils miserable because they saw every mischievous act, and felt constrained to call the culprit to account. This made discipline the principal feature of the school, rather than an incident. Now good order is important and without it the school cannnot be successful. But it must not be a conspicuous feature. It is a means to an end and not the end itself. The main end of the school is to instruct, and order should be exercised with reference to that end. I once had a teacher who came to me daily to complain of the disorder of the girls in her corrider. It was in a boarding school and she was in charge of a hall of some sixteen girls. One day it was loud talking, another it was laughing, again it was failure to keep the study hours faithfully. I called up the girls and questioned them carefully. It gradually grew upon me that the fault was chiefly with the teacher, who was nervous, fussy and falsely conscientious. I found that the girls were well-meaning, and that no wrong had been intended in most cases. I therefore had a kindly talk with the teacher and told her frankly that I thought the trouble lay with her, that she saw too much. No doubt she felt at first as many an assistant has, that her principal was wanting in appreciation of her difficulties, and was not giving her the support that was her due. Of course none of the students knew of my attitude in the matter. But after reflection, Miss P. began herocially to change her own habit with reference to her charge. It required something of a struggle on her part, but she finally conquered. The result was peace of mind to her and good order in that corridor.

One more point in this connection. Sometimes teachers are distressed because their pupils imitate some peculiarity of theirs. It may be peculiarity of walk, poise of body, habit of speech, facial expression, something that attracts the child's attention and he imitates it. Now I do not think for a moment that this is personal. An adult may be and often is cynical, the child never. He notices something different from what he is accustomed to and tries to see if he can do the same. It would have saved me a great deal of pain as a teacher in early life if I could have appreciated the above truth, and realized that when children imitated my peculiarities, and we all have them, it was not aimed at me, it was wholly unpersonal, and therefore in the main, innocent.

Thus far I have been showing what good order does not require, and yet, I think my readers have discovered through this negative treatment pretty nearly what I mean by good order. Nevertheless it may be profitable to state the positive side of the question in a final proposition.

4. *Good order in the schoolroom is attained when every pupil*

attends to his own work at the proper time without unnecessary noise, promptly and cheerfully obeys the wishes of the teacher, and, above all exercises perfect self-control. The first of these propositions has been already discussed under other heads. I have tried to show that it is expected of the pupil that he shall never be idle. Idleness in itself is disorder and the teacher should be disturbed by it. He must also be engaged in the work that belongs to that time. A time for everything and everything in its own time is an aphorism in school government, which, if carried out, will go a great way in securing good order. It also serves to establish a habit that is vitally essential to success in after life. Every child should understand not only that he is to be busy, but that he must be busy with the task that belongs to each particular period. Methodical habits will thus be formed, and these, too, are a part of education as well as good order. Of course this necessitates a statement in the daily program of the work to be done each study period just as plainly as the work of the recitation period. And the teacher should hold her pupils to the one as strictly as to the other. This will save a great deal of confusion and will do much to insure the proper preparation of work. It will do a great deal also to prevent the unnecessary noise that distracts the attention an destroys the respectability of the school. It will be easier for the teacher to distinguish between "the noise of busy industry," and the noise of disorder.

Then, of course, there must be obedience, prompt, and cheerful. I have not the space to discuss the subject of obedience, and trust that some other writer will treat it in this Monograph. I may, however, call attention to the importance of complete and cheerful obedience as essential to good order. Mary Lamson tells us in her "Life of Laura Bridgman" of a most remarkable incident that illustrates my point. It is told briefly, as follows: Laura Bridgman, it will be remembered, was a blind mute, whose case interested the world a half a century ago, as Helen Kellar's interests us now. Laura's teacher found one day that she had neglected to put away her things in her school desk. She reprimanded the girl and told her to put them away. Laura put the things in the desk and brought down the cover with a vicious bang. Her teacher told her to take them out and put them away again quietly. She did exactly as she was told, but gave a fearful screech that startled every one in the room that could hear. Now Laura had not obeyed at all, and obedience was not reached until three days later, having repented of her wrong doing, she begged forgiveness of her teacher. I do not believe that good order has been secured in the school until the pupils yield cheerful and complete as well as formal obedience, and the teacher must not be satisfied with less than this.

But the highest form of order in the school is that which is attained through the self-government of the pupils. A young principal in charge of a school of four hundred pupils and eight teachers, could only visit the other departments of his school by leaving his classes alone. He had charge of a room seating from eighty to ninety pupils, but had an assistant, who took her classes to a small side-room. One day, after spending a half hour in going the rounds of the other rooms, he came back to his room and found a gentleman sitting upon the platform. The gentleman said to him, "I have found here the most remarkable example of good order that I ever witnessed. I stepped into this room without warning and found every pupil attending to his own work, quietly and in a business-like way. I looked around the room for the teacher and was surprised to find the pupils alone. I have been sitting here for twenty minutes and there has not occurred a single misdemeanor or act that might not have occurred in your presence. I think this illustrates the highest ideal of good order. The teacher should aim to bring her class up to that standard, the standard of self-government. so essential particalurly for every one who lives in this land of ours. The child thus learns to measure his act, not by the rules of the school, not by the opinions of the teacher, not by the standards that his comrades set up, though all of these are potent factors, but he will measure his act by·his own standards of right and wrong—the only safe guide in life. This is the end toward which all school government should aim, and order in the best sense is reached only when this end has been gained, namely, each child is a law unto himself and that law is based on the high moral sense which the teacher has implanted in him.

Punishment.

By Rubric N. Roark, Professor of Pedagogy, Lexington, Ky.

THE best theory and practice of punishment are based upon the fundamental idea that its purpose is to reform the offenders and deter others who may be inclined to offend similarly.

The same principle is applicable in the case of either the social criminal or the school culprit; and just in so far as punishment results in the rectification of individual character and the checking of latent transgression, just so far has it accomplished its purpose in the community or the school. The best test—in fact, the only test—of punishment, is that it becomes less and less frequent and severe. The end of punitive measures being the re-formation of the individual, they cannot be pronounced successful until the individual evidences the re-formation of his character by behaving himself without the exercise or threat of external coercion.

The only government worth while is self-government, and to attain this all educational measures—formative and reformative—should be directed. Self-government consists essentially in the sacrifice of immediate impulse or satisfaction of desire in order to secure some more remote and better good. It should be said here that, of course, the best reason for doing right is that *it is right;* but few of us, very few, can justly claim to be actuated by so high a motive. With most adults, and, perhaps, with all children, it is necessary to secure right action by the over-balancing of that which seems good with what will seem better. And, after all, even to the philosophic view, doing right because it is right is simply a better good, a completer satisfaction of desire than anything else would be.

The first principle then, to be laid down as to the character of punishment to be given, is that it should, so far as possible, consist in some form of deprivation. When the child has learned that he cannot enjoy both the immediate and the remote good, and that the remote good is better, and well worth sacrificing the immediate one for, he has learned his first lesson toward self-control.

One of the good things in that good-and-evil combination—marking and grading—is the influence it has upon the laggard through his desire to keep his standing and to move forward with his "grade." The desire for this remoter result often keeps him from yielding to the present temptation to indulge himself at the expense of study. The teacher will have won a great victory when he brings it to pass that the pupil shall consider loss of opportunity to recite with his class, or loss of fellowship with his mates, either in work or play, as his worst deprivations.

But this principle of punishment, like all others, falls somewhat short of universal application. Sometimes deprivation of pleasure or privilege is not sufficient to rectify conduct, and something severer must be used. In spite of all that has been said against corporal punishment, the facts of experience show that it is sometimes very necessary, and when rightly used is highly effective. In accordance with the rule of appealing always to the highest motive to which the child will respond it may be found that he will respond to no higher motive than the dread of physical pain.

Close akin to corporal punishment is that other means of inflicting positive pain—*sarcasm*. Denunciation has been heaped by almost all pedagogists upon this form of punishment, but nevertheless it is true that sometimes nothing is quite so effective as a quiet remark from the teacher with just a shade of sarcasm in it. Of course, it is liable to abuse, as corporal punishment or any other form of correction is, but properly applied, it is as legitimate a means of stimulating right activity and checking the wrong as can be used.

It does not require much straining of meaning to classify both these last forms of punishment as deprivation, for they both deprive the individual of personal comfort and that sense of self-conceit which is necessary to present contentment.

Before leaving this phase of the subject, it is worth while to re-say the oft-uttered dictum that no punishment should be extreme or absurdly unusual. And one kind which has been used a great deal should be absolutely tabooed—that is, assigning of study-tasks. If a pupil fails through negligence to prepare a lesson, the most obvious and natural thing to do is to suspend ordinary privileges until the lesson is properly mastered. But what is here inveighed against is the practice in some schools, notably in English schools of assigning study-tasks as punishment for any sort of offense. The plain and conclusive objection to such a practice is that it inevitably strengthens the opinion which too many pupils already hold, that study is in itself irksome and is something to be avoided.

The effectiveness of any punishment lies largely in the way in which it is administered. The most important principle of administration is, that correction should be so applied as to convince the offender and his fellows of the necessity and justice of it. To do this the teacher must have self-control and a judicial temper, and must carefully eliminate any exhibition of personal bitterness against the offender. When personal ill-feeling is shown against the erring pupil rather than against the offense, correction is too apt to be tinged with a spirit of vindictiveness which is wholly out of harmony with the real aim of all punishment.

Another principle equal in importance to the one just stated is that correction should follow offense with the absolute certainty of the sequence of effect upon cause. There will be many excuses and self-justifications and promises of reform on the part of the offender, and many qualms and shrinkings on the part of the teacher, but none of these should be permitted to come between offense and its certain and just punishment. It must not be supposed, however, that this principle involves the use of the same kind or degree of correction for the same offense as committed by different pupils. What would punish one child adequately might be too little or too much for another: Correction must be fitted to the character of the offender as well as to the offense, and knowing how so to fit it comes only from a careful study of the pupils as individuals.

The teacher's study of the pupil and efforts on his behalf should converge upon the feelings. It is through these that will is reached, directed, and strengthened. The constant aim is to make the pupil self-directing along the line of right interests; external coercion should be kept up only till the pupil is able to stand alone, and it is for the teacher to decide in each individual case just when this can be done.

Having in view the ends of punishment, the teacher should—adapting Gladstone—make it increasingly easy through outward circumstance, but more by inward habit, for the pupil to do right, and increasingly difficult for him to do wrong.

Training Of The Will.

By William H. Burnham, Clark University, Worcester, Mass.

"WHEN I say I will, Satan trembles on his throne," an old New England philosopher used to say; and a greater than he, Immanuel Kant has said, that the only good thing in the world (because the only autonomous thing in the world) is the good will. Philosophers and psychologists have not not ceased to marvel at the autonomous character and dignity of the human will. In the field of education all the general principles of self-activity and self-determination which have inspired the Froebelians and the Hegelians, and either explicitly or indirectly the more concrete principles of all educational sects, have likewise done homage to the autonomous character of the human will. There is also a consensus among teachers and educators in regard to the importance of the training of the will. Modern psychology no longer believes in the will as a faculty, but it makes it no less important. The will in the broadest sense means the totality of the psycho-physic organism's activity. In the narrower sense the will means all activity for which attention is required. The psychology of the will in other words is merely the psychology of voluntary attention and of action. It is not that the will is less important according to modern psychology, but that attention is more important. The complexity of the subject is shown by the current definitions of the will, such as may be found in any of the standard handbooks, for example, those by James, Sully, Ladd, Titchener, and others. But while the subject is very complex, still some of the essential points for the teacher can be put very briefly.

First of all we may set aside the metaphysics of the will and the whole doctrine of its transcendent reality. Not that a philosophical doctrine of the will has no significance for pedagogy. For some minds at least it has great importance. It means that objective existence is an inadequate picture of reality. It means that the results of psychological research give an inadequate account of human personality. It means, in a word, that reality has a significance deeper than anything we have yet grasped. Dr. Harris, with his self-activity and favorite Hegelianism, "will wills will;" Professor Dewey with his self expression; Dr. Münsterberg with his will-world of reality,—all as I understand them more or less closely followers of Hegel. Wundt with his doctrine of apperception:

James with his theory of effort as an independent variable, and the ordinary, unsophisticated layman with his sense of will in relation to duty,—all as it seems to me agree in this, that by direct insight we know a reality that cannot be adequately described in psychological terms. This lies so deep in human nature, however, that there is little danger it will be ignored. But apart from the inspiration that comes, at least to some minds, from this insight, the philosophy of the will, even the problem of determinism or free will, great as the role it has played in educational discussions, does not specially concern practical pedagogy. The conditions of the will are what concern pedagogy, and a very simple statement of the pedagogical aspects of some of these is the aim of this paper.

What can education do? First of all are the negative maxims. These are very important. A certain energy, force of personality and independence, in a word, a certain strength of will is given at birth, and this is the deepest thing in the individual. It is epecially important that the teacher should not check this independence, should not, in a word, break a child's will, as the popular phrase has it. In fact, one of the most important qualifications for a good teacher is the power of self-repression. The teacher should suppress his own will, his own desires, and give ample scope for the development of the child's self, and opportunity for spontaneity of action along the lines of its desires and inherited tendencies.

This, of course, does not mean that the child is not to be guided, but it is merely the well-recognized principle that individuality, energy, independence, and self-activity should not be checked. And again care should be taken not violently to distract attention. The so-called inattentive child is often the most attentive one, only he is giving attention to his own interests. To draw away the attention to something else, psychological tact must be used not to destroy the habit of concentration in trying to teach the power of so-called voluntary attention. And further, care must be exercised in all matters of discipline to keep the number of rules at a minimum. I have elsewhere referred to the school of which it was reported that the pupils made an effort each day to break all the rules, and counted that day lost when they did not succeed. This was will training, but the teacher should be careful not to give opportunity for training in this way by multiplying unnecessary rules. To turn to the positive side, the strength of one's will is gauged by the amount of effort one can make. Will is effort. Strength of will is strength of effort. The aim in the schools is to get the pupil to put forth the maximum amount of effort. Observation has shown every teacher the importance of this. Special research has shown the same. Professor Bryan in his interesting study in learing the telegraphic language has shown very clearly that it is intense effort that educates. The mediocre operator, who for months has made no improvement, under the stress of special stimulus, the need of filling a vacancy, or an opportunity to get a permanent position, makes great effort and often rapidly improves and becomes fitted for a main line operator. The same is true in the learning of other subjects. It is effort that educates. But how can this aim be attained? How can children in schools be made to put forth the maximum amount of effort? Not by chaining them to the desk for as many hours as possible, not by giving as many hours as possible for home study, not by placing difficulties before pupils and deploring the weakness of their wills when they do not overcome them, not even by convincing them of the the evils of wasting their time, and making them pore over their books when heir eye-lids droop, and their noses drop upon the page. Not in ny such way can the aim be accomplished. It must be done by onforming to the unswerving laws of psychology. What these aws are can be easily determined. In regard to some of the essenial points, there is practically a consensus of opinion among all psychologists. First of all, effort of the will depends upon desire. Second, it depends upon the belief in one's power to attain the object desired. Third, it depends upon the psycho-physic conditions of the organism as regards ability to resist fatigue and the ike.

First of all the teacher must create a desire by bringing the thing down to the child's apperception. The child desires what appears useful to him, to make toys, boxes, spoons for his mother, and the like, rather than pen holders, teapot stands, and crochet hooks; and likes to draw birds, animals and houses, rather than tpye forms: to read of animals and sport rather than of scientific classifications; to study language by word and written expression rather than by technical grammar, until at a later period the latter occupations acquire an interest associated with the former. The amount of effort put forth when the child apperceives the utility of the exercises and hence desires to work is shown in the play schools, notably that of Mr. Johnson at Andover. A noteworthy feature of his experiment was the great effort the boys put forth in making toys, in nature study, in gardening, drawing and printing, as well as in various our-door plays.

Secondly, the child must be made to believe that he can do the thing required. The following incident is a typical illustration of what may be accomplished if the children are made to believe they can do someting. In the examination in arithmetic, in one of the western cities a few years ago the pupils were given several problems of a kind different from what they had already had in their work. In all the classes in the city, except one, children noticed that the examples were unfamiliar, and sat back unable to do anything with them. In one school, however, the pupils like the rest, noted the unusual problems, but their teacher said that if their training was good for anything it would prepare them to do new things, so they ought to be able to do problems even if they had never had the same ones before. Thereupon they made an effort, and three or four pupils, the only ones in the city, succeeded in solving the examples correctly. Much depends upon what the teacher says to the pupils. Still more important is the teacher's own faith in their ability to do the work. If the teacher believes the children are capable of accomplishing a great deal, they are likely to believe in themselves and to put forth great effort. The belief in one's ability to do a thing comes most of all, however, not from what the teacher may say, but rather from the pupils having actually done things. The memory of past successes develops the belief in one's power to do something. It is success that nerves the will to effort, whether of Napoleon's soldiers crossing the Alps and on the battle-fields of Italy, or the children in the lowest primary grades wrestling with the first simple problems in arithmetic. Of course the harder the task accomplished, the greater the effort, and the greater the stimulus from success for other tasks. But the maxim for the teacher should be to make the work so easy that the child will believe that he can do it, and success be assured. Perhaps the most common fault among teachers is to make the task too difficult for children in the lower grades, and in the later grades at the beginning of new subjects. Much may be learned here from the training of athletes. The athletic trainer always begins with easy and simple exercises, and little by little increases their difficulty until the learner is able to accomplish great and difficult feats.

If the work in school is not made too difficult for the brighter pupils, it is made too difficult for many individuals in the class. They may pore over their books, but they never make any great effort because they never have any great successes that really make themselves believe they are capable of doing something. When teachers are frank, they are apt to say that the indolence and stupidity of their children is the reason they do not succeed. It is equally true and specially important for teachers to remember that their pupils' lack of success is the cause of their indolence and stupidity. I will give but one concrete case, but it is typical, and I believe every successful teacher of long experience can furnish similar illustrations. In a preparatory school some years ago, a teacher found a boy in his geometry class who could do no work at all; and moreover, he seemed to be lacking in sense and was the butt of the jokes of the other boys. This teacher urged the boy to leave the class and to take up elementary geometry again. The boy did so; and in this simpler work he succeeded so well with some assistance, that when he finished the teacher was obliged to give him 100 per cent. The stimulus of this success made the boy believe that he could do something: he made effort in other subjects, and improved so remarkably that when he graduated he was one of the first of his class.

The very simplicity of this point is liable to make us forget its significance. But every teacher who recalls his own experience will recognize its importance; how disheartening the work until you had the memory of past successes to support you. The importance of this is recognized in the training of teachers. In the best training schools, the conditions are so arranged that the young teacher will always succeed in her first attempts at teaching. As a student, whether in school or in preparing your daily work as a teacher, how one success in solving a problem or meeting a difficulty clears the mind and overcomes fatigue. No one has studied the physiological effect of success, but the experience of alienists indicates its great importance as a nerve tonic in the cure of nervous disorders; that it has great value in the prevention of nervous breakdown, is a common place; and it is not rash to say that it is essential to normal healthy development.

The objection may naturally be raised here do not men fight for lost causes, do they not put forth great effort even when there is no hope of success? Very true, but there is an apparent rather than real exception. In such cases the fight seems worth making for its own sake, and the individual does believe that he is capable of making the fight, although not of achieving the end aimed at.

These two points then are fundamental. If children are to put forth great effort, they must desire the work placed before them, they must believe themselves capable of doing it. Thirdly, regard must be had to the psycho-physic constitution of the pupils, as regards fatigue, ability to work, and the like. The period for work must be made short enough so that intense effort is possible. In any task a person is capable of great effort for a short period, and the result of psychological study and observation alike point to the importance of the pace of work and the effort put forth, rather than the time spent in study and the number of pages turned. Some of the well-known recent investigations of fatigue emphasize this, and the point need not be discussed at length in this paper.

Here, as everywhere, the individual differences of pupils must be regarded. Children differ in the time they can continue effort, they differ in the general confidence they have in their own ability they have to do things, they differ in the particular things they believe they can do, they differ in regard to the things that they deem desirable. These individual differences make at once the brilliancy of the teacher's opportunity, and the distressing difficulty of the teacher's task. It often happens in class work that the dull pupils never have any work easy enough so that they can succeed, and the bright pupils have no task hard enough to require effort. The great advantage of the old rural schools in this respect was that there was opportunity for individualization, and many teachers can remember their own efforts in such schools. The brighter pupils in the arithmetic class sometimes worked for days on a single problem, and the stimulus from finally solving the problem by such great effort was worth weeks of ordinary drill. The aim, however, should be to indivualize, even with the handicap of fifty pupils. The practical maxim should be, if we have a dull, indolent boy, to give him work in some subject so easy that he can not fail so succeed in doing it. If we have a bright boy, give him work hard enough in some subject that it will seem worth while to do it, and that he will have to put forth great effort in the task. At some time, in some way, in some subject, it is the teacher's business to make every pupil achieve marked success. This is one reason for the enrichment of the public school course, for introducing the subject of manual training, cooking and the like. Many a boy has never succeeded in anything until he began manual training, and then some marked success has saved him in other subjects. And many a girl has been inefficient in languages and mathematics, and never had the self-revelation of success until work in cooking, domestic science and the like was begun.

All this is very common-place in psychology; the importance of it is seen, however, from the questions that agitate teachers at the present time. Some say that the work must always be made interesting, and in many cases the great aim in preparing the lessons is always to look for something that will intensely interest if not amuse the children. On the other hand, are those who deprecate making school exercises a round of entertainment, and maintain that pupils ought to be made to do disagreeable things. Life, they say, is full of uninteresting and disagreeable things; if children do not learn to give attention to them, they will turn out inefficient men and women, namby-pamby, wishy-washy characters. Both sides are right. The question, however, is how are we to get the pupils to put forth the maximum amount of effort.. It can be done only by regard for these simple, common-place, but unswerving psychological laws.

To resume very briefly what has been said: psychology no longer regards the will as a faculty. The psychology of the will is the psychology of attention and of action. All education is training of the will. If one have metaphysical insight, let him get all the inspiration possible from belief in the freedom of the will, even if he cannot establish it by reasoning. Let him believe also in the transcendent reality of the will. The original force which is attributed to the will is the deepest thing in life, an inherited force that can hardly be increased or diminished by education, but whose mode of activity may be determined by education. But whatever one's philosophical creed, whether determinist or indeterminist, whether Herbartian or Hegelian, the practical inferences for pedagogy are apt to be much the same. The philosophy of the will does not directly concern the teacher. It is rather what psychology can deal with—the conditions of the will—that are directly important for practical pedagogy. In training the will, the aim is to get the maximum effort. This can be done only by regard for simple, but unswerving psychological laws, some of which have been mentioned. The work must be made desirable to the child by bringing it down to his preperception and apperception, he must be made to believe that he is capable of doing it by having it made to easy at first as to insure success, and at a later stage, so hard as to seem worth doing, and to require effort; and, finally, regard must be had for the psycho-physical conditions as regards fatigue, ability to work, etc.

As stated in the outset, the topic discussed in this paper is very complex. The problem of will training is the whole problem of education. No attempt has been made even to outline the whole subject. A few simple points have been emphasized; but many others are important. From the wider point of view the philosophical aspects, which have been set aside as not specially concerning practical pedagogy, are important, as well as other more practical aspects, such as self abnegation in all its forms from the simple obedience of the child in the nursery to the highest form of self-surrender referred to by Tennyson in "In Memoriam," "Our wills are ours to make them thine;" the whole matter of inhibition or self control, essential for health as well as for education and morality; the genetic study of the will in the child, and the general development of will in the broad sense through the stages of instinctive action, voluntary effort, and habit; defects of the will; muscle training in relation to the will, and the whole matter of concrete methods and devices for training.

The brief discussion given here should be supplemented by reading the following books and articles:

Buisson: Education de la Volonté, *Revue Pédagogique*, October, 1899.

Dewey: Interest, Second Supplement to the Herbart Year Book, 1895.

Hall, G. Stanley: Moral Education and Will Training, *Pedagogical Seminary*, June, 1892.

James: Talks to Teachers on Psychology, New York, 1899. Chapters on Attention and Will.

The Duties Of The Teacher, To The Parent, The Principal, And The Pupil.

By Burtis C. Magie, Principal Public School No. 18, New York.

THE child goes to three schools, the home, the playground, the class-room. In the play-ground nature is the instructor, in the home the parent, in the class-room the teacher. These school-masters are partners in the common business of the child's education.

The essential element in the co-partnership of the mother and teacher, is co-operation : this said, all is said.

The parental co-operation is nearly always accorded ; sometimes in greater, sometimes in less degree. Since parental co-operation is an essential requisite for the successful work of the education that goes on in the class-room, it becomes the duty of the teacher to secure it, or at least to use every means at his command to secure it.

It is to be remembered that in all but exceptional cases the teacher has at the start the support and approval of the parent. Whenever a child is sent willingly to school the mother's hope and affection goes with it. The teacher is regarded by the mother as a friend.

The strongest co-operation that can be given at all by the parent is given unasked. In the home the constant admonition to industry and good conduct, the silent aid of the unexpressed desire for the welfare of the school, is the parental contribution to the capital of the firm. But this co-operation, so easily had at the start, will only continue when it is merited by those qualities which naturally secure it, the confidence of the parent in the justice, ability, and knowledge, of her child's instructor.

It is consequently the duty of the teacher to make himself possessed of those qualities or virtues without which the end sought cannot be attained.

It should not be forgotten that while the teacher ought to secure the co-operation of the mother, he ought also to co-operate with her.

It is his duty to manifest to his pupils a respect for the rights and feelings of the parents, and this in some measure, even in those cases in which it is hard to find grounds for esteem. The confidence, the sympathy and the support which he seeks to secure from them, should be freely given by him.

While co-operation most fully expresses in a single word the first group of duties which we are considering, loyalty is the term which best generalizes the relation that ought to be maintained by the teacher towards the principal.

There is not to be understood by this a personal loyalty, but a willingness and a purpose to carry out the general plan of administration of the school in the spirit of discipline, in the method of instruction, and in the unity of aim.

Besides this is the duty of responsibility. The actual work of the school is done by the teachers. Where it is not done well in any class, or place, where there is defect in result, in method, in order, or in other particular, the teacher of the class in which the defect occurs, or the teacher in charge where the result is not satisfactory, should fully assume and acknowledge his responsibility for whatever the short coming may be.

Many difficulties occur because of a failure on the part of those who have assumed responsible offices to acknowledge or even to feel the obligation which rests upon them for the proper and successful performance of their duties.

Besides this every teacher ought to endeavor to promote a harmony of feeling in the school. This is, perhaps, less a duty to the principal than to the teacher himself. It nevertheless relates to the principal. No duty is more difficult, in many instances faithfully and sincerely to perform, and none is more truly obligatory upon the teacher.

The duty of the teacher to the pupil is education.

In mental education, so called, he should thoroughly qualify himself in knowledge, in skill, and in method.

To discuss the details of his qualification in mental instruction would scarcely be in place in so brief a paper as this.

The ethical side of the question, however, not only admits of discussion here, but in some measure demands it. For there is some dispute as to whether direct moral training has any place in the public school. The following statements seem to me to be decisive as to this point.

The theory of modern education demands it.

The doctrine of the harmonious development of the powers of the mind is of general acceptance, and such harmony is only possible when ethical training as well as mental is made a part of the curriculum.

In many instances the moral training which children receive at home amounts practically to nothing. The instruction of the school is the only direct teaching of this kind they are ever likely to receive.

Moral education is eminently practical. However much or little men may use the other acquisitions gained in the class-room, the moral training is for every day use. It has quite as much to do with success in life as scholarship.

For these reasons it would appear that some observation upon methods of training the moral faculties would be best suited to a discussion of the duties of the teacher to the pupil.

Moral duties are often divided into those which relate to self and those which relate to others. But at the present stage of educational advancement an elaborate analysis of ethical principles is not so much needed as a clear statement of what duties are most proper to childhood, and the order in which, and the method by which, they may best be taught, so that the acquisition of one may lay the foundation for the development of a second.

At first the child performs certain acts, and does so unconsciously, *i. e.*, without being aware of attending to the mental activity. As the German method in geometry develops, through the performance of acts that result in logical conclusions, a power of geometrical argument without conscious reasoning, so the earliest stages of moral education, consist of concrete acts with little or no reflective thought about them. The ethical concept follows the same law of formation as any other concept.

A specific application of these principles to the work of the school-room will perhaps, make the meaning of what has been said more readily intelligible.

The necessity of keeping order, is often regarded by the teacher as a serious obstacle to his work. An enthusiastic young teacher anxious to impart the knowledge which he has acquired frequently looks upon "discipline" as a necessary evil. But rightly considered the need of "keeping order" will be found to present the opportunity that is most valuable for purposes of moral instruction; for every properly conducted exercise in "order" is a lesson in ethics.

At the age of five or six a power of deciding about right and wrong has been considerably developed in children. At the moment of entering school the range of objects to which their power may be applied is largely increased; and many exercises in choice between right and wrong acts may be arranged to develop it further.

It is the duty of the teacher to regulate and direct such practice so that a pupil may pass from a vague use of the power to a conscious purpose in its exercise, and finally to an habitual and, as it were, instinctive performance of duty.

A child finds itself at first in a position where a choice between two courses of action must be made. In time it begins to reflect upon the reason on account of which it makes moral decisions. Finally it formulates the reason into what is called a moral principle, and conforms its practice to this principle, until the ideal becomes a constituent element of its character. In adult life we say of a person who has thus moulded into his character a number of moral ideals, that he is a man of high principles, and of one whose character is constituted of immoral laws, that he is bad principled ;

and, sometimes, of another, that he is unprincipled. Wickersham expresses the divisions of the work of teaching morals in this way: the child "must *know* what is right, he must *feel* the claims of right, and he must *will* to do the right." In other words the teacher must instruct in moral ideals, he must cultivate the moral emotions, and he must train the will, of these three the training of the will is first. It is difficult, perhaps impossible, to distinguish in fact the actual processes of growth of ideals, emotions, and will, but for purposes of logical analysis and explanation it is convenient to consider the will first: and this would also seem to be true in regard to the order to be followed in teaching.

The will is sometimes defined as persistent choice, and for our present purpose this expression is peculiarly fortunate. It enables us to consider will-training under two aspects: (1) Choice, (2) Persistence.

As choice, will may be regarded as duty. Duty is the choice of right: sometimes it is said to be the choice of the higher course of action.

Moral instruction begins then with duty.

The child starts out with the idea that moral acts are good or bad. When it is convenient or agreeable he chooses to do the good: and in like manner, and for the same reason, he chooses to do the bad. It is to be remarked that in most cases of choice among children the distinction between good and bad is artificial. The instinct in normal children is to choose to do right. Teachers frequently make serious mistakes in attributing to a pupil a great amount of apperceptive knowledge and of depraved motives, when actually the 'bad' conduct has arisen from ignorance, from an excess of animal spirits, or from some other equally innocuous cause.

As the exercises of the school-room are arranged and practiced, and as little steps of progress are made, a habit of right choice is established. At last comes the epoch of positive instruction, and the habit becomes a conscious principle moulded into character. The steps are at first easy, and afterwards become more difficult. The simple ideal grows into the complex; the concrete into the abstract.

Good teachers follow this practice, not beginning, perhaps, with the virtue called duty, perhaps, not intentionally with any positive or systematic purpose,—and sometimes produce remarkable results. But this is no reason, in fact rather the reverse, why scientific moral instruction ought not to receive much more attention than has yet been given to it.

It may be remarked in passing that virtues are nearly as contagious as vices. Continuous daily contact with vigorous moral principles in action is pretty sure to result in inoculation. No instruction or exercise is so likely to produce good results in moral training as a sound moral atmosphere. Other aids to ethical gr of very great and far-reaching value when rightly used are stories and fables, and instances of moral excellence taken history. These may be used at almost any period of progress.

Co-ordinate with duty is self-control. This is will in the a ceptive form of persistent choice. Self-control and disciplin for present purposes nearly synonymous. To the power of c applied to duty is added the power of tenacity of purpose, an two coalesce and constitute the virtue of self-control. The secu of self-control is generally called discipline—sometimes, unhap mistaken for order. A well disciplined boy is a boy with a trained will. A well disciplined class can take care of itself.

The exercises of the class called order, can readily be us train the quality of tenacity. A very talkative child may be ind to give up talking, not simply because the teacher tells him t so, but because an efficient motive properly presented excites in a disposition to self-control in this respect. He chooses not to t or makes a resolution to that effect. He finds himself unabl keep his resolution. Incentives are so placed before him a induce him to persist in his choice. At first he overcomes his habit, or practices his good one, for a very short time ; afterw for longer periods ; at length he forms a habit of good conduc respect to this fault. By so doing he is training that eleme will popularly known as stick-to-it-iveness.

As the child matures the incentives to effort in moral gro become more and more remote. At first the desire of the appr and of the praise of the teacher or the parent are among strongest. In time the desire of self-improvement and of the fo tion of character are moving impulses. The motive set be advanced children in the cultivation of determination is character ; of persistence, strong character.

Efficient motives for acquiring tenacity of purpose, are readily brought to bear upon the child, or at least upon the b than those for acquiring decision of character. Perhaps the for attribute affords better opportunities for attractive and allu illustration. Brilliant men, especially soldierly men, have alw possessed the characteristic of tenacity of purpose in large meas It is their most manifest and ostentatious characteristic. But power of right choice is quite as essential a virtue as persiste

These habits of right choice and tenacity of purpose prov incalculable advantage to young persons entering upon a busi career, surrounded, as they usually are, by the numerous temptati that beset the early period of active life suddenly freed in gre or less degree from the restraints of home and school.

The third virtue to be considered is industry. This app very readily to a child's apprehension. Especially is it true of poor that the necessity of industry is brought to the attentio e children at a very early period. In the class-room it may be own that industry can be exercised in many other ways than in at of working for money. A child may be industrious, that is, he ay work hard for a good purpose in endeavoring to form the bits that together make up a fine character; or to acquire a nowledge of the subjects taught in the school; he can be indus- ious in giving attention, in studying particular lessons, or in rompt compliance with the rules of order.

The practice of the virtues already named lays a foundation for e cultivation of the quality of obedience, which is willing com- iance with lawful authority.

These four are the cardinal virtues of the class-room. They are sential virtues of the citizen. No teacher does his full duty who es not develop them in the children under his charge.

Among other moral qualities that are susceptible of cultivation children these are worthy of mention:

Promptness, regularity, neatness.

Courage, honor, patriotism.

Truthfulness, respect, courtesy.

The avoidance of cruelty, brutality, indecency, profanity, temperance.

We have endeavored to emphasize the importance of direct ral education in the school-room as a duty of the teacher, and to ll attention to the true theory of such instruction. Single acts quently repeated become habits. Habitual acts become ideals ich grow into and constitute character. The fundamental ideals y be considered to be duty, self-control, industry, and obedience, on which others are founded.

It would be out of place here to discuss further either methods training or the order of procedure. Nor have we space to touch on the training of the emotions, or the treatment of other related ements of mental activity, however important a place they might entitled to in a discussion of moral education in elementary hools. These matters must be left to a more convenient time.

There are, however, two other matters that ought to be men- ned among the duties of a teacher to his pupils, which relate to e mutual disposition of the master and scholar. One is affection, e other is manners.

A teacher should be inspired by love for his pupils, and should spire them with love for him.

Compayré, in his Lectures on Pedagogy, quotes the following ntences from Guizot:

" What a happy union of qualities is necessary to make a good hool-master. A good school-master is a man who ought to know uch more than he teaches in order to teach with intelligence and al. * * who * * ought to have an elevated soul in order to eserve that dignity of feeling and even of manner without which he will never gain the respect and confidence of families ; wh ought to possess a rare union of mildness and firmness" ; "wh ought not to be ignorant of his rights, but thinking much mor of his duties ; * * not desiring to withdraw from his occupation content with his situation, because of the good he is doing in i resolved to live and die in the bosom of the school, in the service o common school instruction, which is, for him, the service of Go and Man."

In Rosenkranz's Philosophy of Education, manners or "polite ness" is spoken of as a form of 'social culture', a necessar element of civilization. "The essence of politeness consists o treating others as if they were perfectly ideal people. The polit person utterly ignores all rudeness shown to him, and treats other as if they intended the same politeness towards him. He prefer others before himself, and adopts as a second nature the form o divine charity or "altruism" which devotes itself to the good o others. Politeness is only the form of this altruism."

While we would prefer to say that the essence of good manner the principle of gentlemanliness, is consideration for the feeling of others, the idea, however expressed is well worthy of the atten tion of thoughtful teachers. The presentation in this somewha abstract form of the duties on the part of the teacher of love fo his children and of training them in good manners, one view bein taken from the French who are reputed to attach greater value t appearances than to reality, and the other from the German, wh are supposed to regard the essence of affection as greatly superio to its form of politeness, renders the emphasis thus given to th importance of these qualities less liable to the appearance of affec tation and pedantry than would be the case with a more direc mode of assertion.

The following outline presents in tabular form an analysis o the duties of the teacher to the parent, the principal, and th pupil. The reader by careful study of it may be able to give it content that is not to be found in the text. But when all is don and all is said, the one fact of last value contained herein is simp this: These duties are real virtues which every teacher ought possess.

The Chief Duty of the Teacher to.............

- The Parent, is Co-operation, involving..................
  - The establishment of Confidence in the teacher's.
    - Knowledge.
    - Justice.
    - Ability.
  - Mutual Respect for each other's..................
    - Methods.
    - Purposes.
  - Sympathy for the child's..
    - Environments.
    - Prospects.
- The Principal, is Loyalty, involving..
  - Responsibility as to......
    - Details.
    - Results.
  - Support in................
    - Method.
    - Discipline.
    - Unity.
- The Pupil, is Education, including
  - Mental....................
  - Physical..................
    - All involving
      - Instruction.
      - Discipline.
      - Training.
  - Moral, involving..........
    - Instruction as to......
      - Ethical principle or Moral Ideals, and especially Virtues connected with school life.
    - Discipline of the will as
      - Duty.
      - Self-control.
    - Training of............
      - Emotions.
      - Desires.
      - Habits.

WITH THE AIM OF FORMING GOOD CHARACTER.

How Far Should The Pupil Be Entrusted In Self-Government?

By John Dwyer, Principal Public School 8, New York City.

IN estimating the value of the great work done by the schools, t public take but a passing interest in the physical and mor aspects of education and make the acquisition of knowledge t all important factor. Parents who will make anxious inquiry co cerning the progress of their children in the several studies, are sile concerning their moral growth. Schools and classes are general rated not only by the public, but by school authorities as we according to their intellectual standing. The civil service lists a comprised of the names of those who have stood high in a scholast examination. The graduates of our schools are those whose ment attainments were satisfactory. Thus is the body politic impress with the idea that schools are maintained principally for the acqui tion of knowledge.

While force of character, industrious habits, promptness attending to business affairs and other kindred traits are deem essential to man's success in life, is it not strange that so litt importance is attached to training in correct habits and the develo ment of the moral nature during school life?

It may be thought that if the full complement of talks on mora be given by the teacher or principal that the school has done its du in the line of moral training. If this were the limit of moral traini in the schools, the public would be fully justified in placing litt value on it, for abstract moral principles can have but small infl ence on the minds of children. This popular conception of mor training does the schools of to-day a great injustice. Morals shou be taught by concrete example, by proper literature, and by judicio discipline.

The child has little interest in the remote; let whatever is p before him be some thing he can see, feel and take part in. D Charles A. McMurry says:

> "It is not the bare knowledge of right or wrong developed, b the deep springs of feeling and emotion that are opened, which gu up into volitional acts."

Essential as it is that feelings should result in action, it is st more essential for the development of the child's moral nature th correct habits be acquired in early school life. While it is tr that a right act when done at the bidding of the teacher, is not a moral act, it is equally true that correct habits of acting will bring about correct thinking on the part of the child; therefore, discipline is not only necessary to facilitate classwork, but it is a most potent factor in preparing a good ground work for moral development.

Doctor Hughes of Toronto, tells us that:

"Doing conscious acts in obedience to the teacher's command, is the surest way to develop the power of responsive co-operation with the teacher."

Professor Bowne in his book on ethics, states:

"Obedience under tutelage and from non-moral motives may yet lead to conduct in accordance with our true good."

This author would "adapt the motive to the grade of the development." Psychologists teach that not only have habits a great influence on the moral but that even our physical attitude has some bearing on it. It is evident, therefore, that the manner in which discipline is maintained and the nature of the discipline mean much for the moral growth of the child. The question is, how much self-government should be practised in the classroom for the proper moral development of the child?

At the present time there is a growing tendency to allow the pupil considerable latitude. It is advocated by some of our theoretical schoolmen that pupils should be treated as adults, that teachers should concede as far as possible to the wishes of the child, that firm discipline should be abolished and that in its stead self-government should be practiced. If the pupil do not feel like doing certain work at a set time, let him follow his own inclination. Let him do the work in which he takes the greatest delight; do not hamper him, for that which is best suited to his taste, will best bring out his several activities. This kind of discipline is said to accord with the natural and harmonious development of the child's life.

This is the theory of self-government and of pleasure, and a more pernicious theory from a moral standpoint could not well be devised. When the child first enters school, he is utterly unfitted to govern himself. He is a bundle of instincts, impulses and appetites; by these he is swayed and dominated; he has no fixed standard of right and wrong. It requires years of careful training before these impulses and contending passions are brought under the control of reason and the boy becomes truly a moral being.

There is no better way of preparing the pupil for moral training than by placing him under a kind, sympathetic yet firm rule. As a striking result of a weak and undecisive rule, witness the indulged boy spoiled by the well meant but misdirected efforts of a fond parent. It is not enough to teach what is right, see that the act is right. It is well in the early part of the pupil's career that he obey

implicitly the kindly yet firm rule of the s
act is a forerunner to a moral act.

Professor Bowne says:

"The ideal, indeed, is not reached until tl
to the right act; but in the meantime, right
from any consideration of motive, are of
in the moral development of society. For th
and morally undeveloped, an authority which
does a most beneficent work; and the sanc
affixes take the place of a weak or wanting
great advantage of all concerned."

Commissioner Harris says concerning this

"Moral instruction should secure the
habits. A practice of the moral will lead tow
ing. It would seem that the children in the
schools should be taught moral practices and
theory later. Moral training in school, ther
merely mechanical obedience and will develop
stage of responsibility."

According to Professor James "all our
definite form is but a mass of habits and that
dredths of our activity is pure automatic and

From the statements of the authors quote
especial significance should be given to right
right thinking does not precede it. It, the
teacher to be vigilant in securing correct action of the
pupil whose every act is to have some influence on his character.

As self-government for young children, would not insure correct practices, it, therefore, has no place in the primary grades. Children need a guide and master who in a mild and sympathetic manner, yet tactful and firm, will see that correct behavior even in little things is practiced.

I have known self-government to be practiced in the grammar grades with the most deplorable results. The pupils were to do right for right's sake. A most admirable ideal it is true, but for those pupils it was the merest abstraction. It tended to make them vacillating, weak, hypocritical and indolent. They had no fixed standard of right and wrong. Whichever way their whims carried them was, to them, the right way.

If they were not inclined to do certain work, the work was not done; if they chose to worry the teacher by petty annoyances, they did it; if the teacher were rash enough to remonstrate with them, he would quickly learn that those pupils had any number of rights, that even the teacher was bound to respect. They were led to

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believe that they were doing right for right's sake when the question of right, perhaps, never entered their minds. This kind of training in self-government does not give a boy force of character; t does not give him correct habits in truth-telling, in punctuality, in regularity and in industry. It does not give him self-control nor any idea of individual responsibility. In fact, it does not make the *man*. Self-government in a more limited form is sometimes practiced in certain schools.

The class may select a leader who assists the teacher in keeping order, or a committee of pupils may be selected for this same purpose. This committee is to decide what punishment is to be meted out to the wrong-doers and to assist otherwise in class-government.

Another plan is to form an organization modeled after the plan of a city government, with mayor, aldermen, judges, policemen and other city officials. This plan is recommended by some theorists because of the valuable training it gives the boys in citizenship and in self reliance. The responsibility each boy assumes in performing the onerous duty of a citizen tends to give him force of character and self-control. Not long since the latter plan was adopted by a progressive principal in one of our western cities. According to reports it was astonishing to see how quickly those western lads learned the ways of some of the citizens of our Republic.

Small change, jack-knives, tops, and other possessions were given freely for votes for the favorite candidates. Lying was indulged in, and all sorts of schemes and tricks were practiced. An investigation was held by the board of education and the principal was dismissed. It may be safely assumed that no other trial will be given this plan of self-government in that city for the ensuing year.

The question as to how far the pupils of the grammar departments or schools should be trusted in self-government, depends upon the size of the school and the classes, the character of the pupils, the moral tone of the school, the kind of discipline enforced and the character of the teachers and the principal. What may be done with a few bright, well-bred pupils in a private school having small classes is a poor criterion as to what ought to be done in a public school of several hundred children. Some of those public schools are like great Pandora boxes filled with good and evil. All sorts and conditions of life are represented; there are pupils who come from refined homes, and others who come from the most wretched tenements; those who are taught at home that lying and stealing are sinful and others who are encouraged by parents in these nefarious practices; those who are accustomed to obey orders at home and others who obey orders only at school.

They come from various environments and represent various racial characteristics and hereditary instincts; their standards of right and wrong are various. With some of them the wrong nsists in being detected in wrong-doing. In dealing with such a hool, it is necessary at first to become master of the situation and hile this is being done, the teachers and principal should have full harge. To make kindly appeals in the beginning to some of those pupils would be a mere waste of time. If you plead for help, you will plead in vain.

Their love of knowledge will not assist you much; the desire to make preparation for life's work may appeal to few. All those things of the future are more or less remote and do not vividly impress the mind of the average boy.

The sport of the moment is at hand. Give the average boy a choice. Which will he choose, sport or work? It is well to insure right action first. The teacher of tact will have little trouble to do this if she keeps her pupils busy. Boys do not object to good working discipline. They appreciate a teacher who is exacting providing she be sympathetic and just. They like firmness as much as they dislike indecision and weakness. If boys be treated properly this enforced order will in time be replaced by willing obedience, and when we have willing obedience re-enforced by habits of right acting, the school acquires a moral tone which is a great assistance to those who are inclined to be wayward.

Boys are great imitators, and on entering a new school soon fall in with the moral tone of those about them. When a school has a good moral tone and boys are granted certain privileges, they in time become impressed with a sense of individual responsibility and act from proper motives. The act thus becomes a moral one. The moral condition of the average school boy precludes him from being self governing only to a limited extent. His moral nature develops more slowly than does his mental or physical. If, as Professor Bowne says: "Life and social development are not carried on mainly by moral motives but rather by natural ones," why expect so much of the school boy?

The aim of the average man is not the moral aim. He works for riches, for approbation of his fellow-man, as he desires "to be well thought of"; he works to better his own condition and that of his family; he works for honor, for fame. The aims may be proper ones, but not moral. The adolescent period of the pupil's life is a most important one for the acquisition of good habits. It is a period when a weak will often succumbs to strong desires and at no time in the pupil's career does he need more assistance in combating the evils that beset his path than at this stage of his life.

Judicious school discipline will do much to strengthen his self-control. If the school will cause certain evil tendencies to be inhibited by the pupil and will assist in overcoming tendencies to shirk duty and to lie, it is certainly doing beneficial work.

Every time the pupil performs an act by inhibiting certain inclinations to do wrong, his control of self is strengthened. If he be permitted to follow on the lines of least resistance, to tread in pleasure's path in satisfying his whims and fancies, he will lack the very essence of manhood, *force*, which according to Professor Dewey is "efficiency in execution, and the necessary constituent of character."

We do not admire the man of good intentions; we admire him who executes them. As the moral act must be preceded by the proper motive, clear thinking is indispensable to will power. We quote Professor James:

"Pupils are to be saved: first by the stock of ideas furnished them; second, by the amount of voluntary attention they can exert in holding to the right ones, however impalatable; and third, by the several habits of acting definitely on these latter to which they have been trained."

Thus according to Professor James, if we are to save pupils, we must give them ideas, power to hold these ideas clearly in mind and finally definite habits of carrying these thoughts over into action. Can these results be secured unless the teacher be vigilant in his work? Can they be accomplished if the pupil be entrusted with a large degree of self-government? Will self-government insure the acquisition of good habits? Will it help to mould the pupil into a strong character? Certain schoolmen would secure this result which insures self-control for the pupil, by simply evoking the self-activity of the pupils. To be able to do this should be the teacher's chief ambition. Will self-government best promote proper self-activity on the part of the pupils? If it were possible to evoke this activity in all pupils of a class, the ideal would be reached and the class would be self-governing. Even in small classes of select pupils where these conditions appear to exist, under a strong teacher, it is only apparent, not real. The teacher's influence dominates every action of the pupil; her example and inspiring presence induces in him a desire to imitate her and to please her in everyway.

The moral tone of the class and the school tends to inhibit evil tendencies. This kind of government is far from government by the pupils. It is the opposite of it. The one power dominates all in bringing out the best in each pupil.

This work is very unlike the chattering of those pupils who are entrusted with self-government, they waste much valuable time in talking of abstract rights, and instead of evoking their self-activity, they acquire a certain flippancy of manner that is not conducive to clear thinking.

If self-government be not conducive to good work in small classes of select pupils, it certainly would not be beneficial in large classes of our public schools.

A teacher who must in five months, instruct a class of fifty boys in the several branches which comprise the work of a grammar grade, has but little time to experiment on this kind of government. She must deal with the good boy who is not bright, with the bright boy who is not good, with the household pet, with the dull boy, with him who attends school for fear of the law, with the boy who divides his time between school and street, and who obeys orders only when at school. Those boys represent all sorts of environments and are dominated by various kinds of influences at home and on the street. In a moral sense they represent several grades of development. They have their various prejudices, dislikes, aversions and inherited tendencies for good and evil. Some of them are at the mercy of their impulses and passions and with such, anything that pleases is permissible; others have subordinated their desires more or less by examples of parents and friends. Some have acquired habits of industry, others have not. Many have respect for law, few, perhaps, have not. In what manner should this class be managed so that the mental, physical and moral growth of each boy be best promoted?

The work should be regulated by the needs of the pupils who should be considered the true center of the teacher's work. There are boys who need to be repressed, others encouraged, all should be interested and kept busy so that active attention may be secured. Arbitrary rule should not be enforced, neither should lax discipline prevail. The teacher who permits pupils to do that which is most pleasing to them and will not exact of them, definite work is no better than the schoolmaster so aptly pictured by Goldsmith:

> "Well had the boding trembler learned to trace,
> The day's disasters in his morning face."

The teacher's work does not consist merely in being a guide to the pupil, in conditioning things so that his self-activity is brought out and his interest aroused, but consists also in training him to do his duty, even though the work be not pleasurable, and all school work cannot be pleasurable. No matter in how interesting a manner the work may be presented, still much drudgery is necessary for the average school boy in acquiring an education.

To solve difficult problems, to devive rules and principles, to express thoughts clearly on paper, to compare, classify and to reason cannot be considered a labor of love for every pupil.

All the various incentives known to the efficient teacher should be used, and each boy who is self-governing should be encouraged in his right acting, while those who are inclined to interfere with the rights of their neighbors should have the attention of the teacher. They should be obliged to submit to whatever rules may be deemed best for the majority of the class. In time this form of right acting will become easy to even the latter class of boys and willing obedience will prevail. When the class is in this condition, each pupil begins to have control over self, and we have self-government in this sense only, not in the sense that a pupil should take actual part in controlling others of the class.

It may be safe to say that self-control is more certain to be acquired on the part of each pupil when the teacher has full charge than when part of his power is delegated to undeveloped school children. Under a wise teacher's control no time is lost in petty disputes. Self-control is nurtured, correct training in habits is practised, mechanical obedience becomes willing obedience, and this in time becomes moral. The imitative act of the small boy precedes the moral act of the man. Emulation which springs from imitation, induces in time in the mind of the pupil a proper pride in self and a laudable ambition to go forth from the class-room, willing to do his share of life's work. I would, therefore, not favor entrusting pupils with class government on the ground that it would not be conducive to their proper moral development, until Spencer's prediction concerning the evolution of human conduct will have become more than a pleasing theory, and all men will take real pleasure in doing right and will have no desire to do wrong, or when the poet's dream of future empire will have become a verity:

> "There the common sense of most
> Shall hold a fretful realm in awe,
> And the kindly earth shall slumber,
> Lapt in universal law."

The Moral Influence Of The Public School.

By William P. McCarthy, Principal Public School 101, New York.

THE assertion has been made many times recently that there is a lack of moral tone in the training of the common school. Editors, clergymen and critics, generally, have seized upon this topic as a fine morsel for their mental digestion, and have turned it under their tongues and between their teeth in an endearing manner. How often we all have heard these enthusiastic but misguided critics hurl at our public schools and at us as the exponents of the system of public education, their shafts of abuse and ridicule.

On the other hand, it has been asserted by the defenders of the system of public education that the purpose of the public school, as seen in its origin and history, is intellectual culture, pure and simple, with no regard for moral training, except incidentally where the *wise* teacher, in the work of intellectual culture, sees the opportunity and necessity for physical grace and moral example, with more emphasis on the physical than on the moral side of the pupils' well being.

One writer, an acknowledged national educational expert, says,—"It was not for moral training and the formation of character, except as mental culture shall tend to that result, that the public school was instituted. Morals are not taught in fourteen weeks, or in any number of stated recitations, but should be like the prayer of the Christian,—

The teacher's vital breath,
The teacher's native air,
Her watchword at the school room door,
Her self-hood everywhere.——

that with bodily health unimpaired, strong in the integrity of a high and noble character, induced by a cultured intellect and the habits of industry and self restraint by which it may best be secured, our pupils, without fear and without reproach, may go forth like true knights, to battle for the right in the complete panoply of a true scholarship."

I concede all the influence of a teacher possessing the virtues described, upon the moral tone of pupils, but I contend that moral training is as much a part of the curriculum and the necessary reason for the public school as is the intellectual culture of the pupils as future citizens and possible rulers of the state.

How many of us who have been pupils in the public schools can recall some individual teacher whose fine nature and true sympathy has made a lasting impression for good upon our whole lives. Has it been only by the mere self-hood of the teacher in his high moral tone, or has it been by the gentle hint upon happy and appropriate occasions, the incident used as a text for a short talk, dropped into spice the ordinary programme of a day's class-work; the suggestion of a book or story to be read, called forth by a bit of news culled from the daily paper or brought to school as a morsel of gossip by a thoughtless child?

That "we learn to do by doing" is axiomatic in all educational work; and that the child learns morality or immorality by the thoughtless performance of actions or thoughts goes without saying. When the judgment is developed and the child reaches the condition of being able to judge of the rectitude of its thoughts or ideas, the extent to which a habit has been ingrafted is often the cause of the success or failure of the inner promptings to right as an influence upon the future of the child's character.

Right here it may not be amiss to remember the origin of the word "moral," as indicating a custom, a habit, pointing us not so much to the philosophic belief as to the conduct of life; not to the doctrinal or sectarian leaning of the subject but rather to the power to acquire self-control, a command of the affections, passions and desires, with the intent and will to direct to worthy ends, and a desire to go forth into life with an abhorrence of the depraved and base, faithful to the right and sensitive to merited censure.

Nor must it be forgotten that the school is not the only force with which the pupil comes in contact in his early life. Though for five hours a day, the child is under the influence of the teacher, yet a far greater number are spent with associations upon the street, in the home, and elsewhere where the examples are of a kind to leave an impress almost indelible upon the young mind and character. Often do children enter the public schools with their first lessons learned in these associations, of such a pernicious nature, that only constant care and watchfulness on the part of the teacher can prevent their spreading among others in the classes to which such children have been assigned. In many instances the questions of submission to proper authority or lawlessness, of truth or falsehoold, of deceit or honesty, of profit without capital or exertion, have been decided in the minds of pupils, or rather of prospective pupils, long before most of us are willing to admit they are capable of understanding these matters.

Under these circumstances, the teacher must exert an influence for good not only by her own personality, but through lessons which have for their primary result, hidden from the child's perceptive powers, the uplifting of the moral tone and the eradication of evil tendencies by the strengthening of the will to make character above surroundings, and contentment and satisfaction with self-government and self-control under difficulties a higher motive than mere personal gain or public reputation.

No institution or force other than the public school has exerted a more healthful influence in thus moulding the minds of the children, in overcoming habits of vice and depravity, in making successful endeavor for uprightness of purpose, or in surrounding the child with a pure moral atmosphere, free from the narrowing confines of sectarianism.

The superintendent of schools of one of our greatest American cities, in speaking of the moral training of the public schools, says, and very truly, too,—"In their very constitution are found the most efficient means for inducing a well-ordered life. If order is Heaven's first law, it must be the first and abiding rule of the school; not that fixed and monotonous routine enforced by the mere martinet in discipline, that deadens the vital force, stifles thought, quenches ambition, and, regarding more the outward form than the inner life, aims only at uniformity, though only of dulness and stupidity, but that quiet, unconscious harmony that results from each member moving undisturbed in his proper sphere in willing conformity to an unfelt but all controlling power; no rules for the sake of ruling, no friction or jarring of ill-adjusted parts, none of the pomp and circumstance of military display, but all moving on to the attainment of a desired end." It will thus be seen that the habits of intelligent and productive industry tend to the concentration of thought and mind in a manner to nurse the moral virtues and prepare the subject for the intelligent reception of lessons upon moralit to be delivered by the teacher later on.

It must be remembered that the teachers in our public schools have to deal not only with the native born, and the English, German, Irish, French and other children,—immigrants to our shores but allied in interests and sympathies with native Americans,—but also with the Poles, the Russians, the Italians, the Hungarians and other diverse and incongruous elements with their inherited and acquired differences of temperament, habits and tendencies, which are to be unified, controlled, stimulated, directed and elevated to a proper standard of culture and of respect for the democratic-republican institutions of our form of government and a proper and wholesome understanding of the rights, privileges and duties of citizenship thereunder.

How well the teachers have met the problems thus presented for their solution is proven by the fact that the public schools are to-day the greatest factor in the Republic for pariotism and a decent regard for law and order. Where, more than in the public schools, are children's minds developed along the lines of moral sensibility, generosity, fraternity, respect for authority and for elders and veneration for the name of God? That "example is better than precept," is axiomatic; and where more than in the public schools, can be found a class of people, men or women, of a higher moral tone or more rigid integrity?

Now to come down to the actual means employed in the public schools for the inculcation of a high morality among the children of o-day. We have first, the lessons in punctuality as evinced in the assembly for school sessions always at a set time; secondly, veneration for the Creator in the reading from the Scriptures and in the nature studies; cheerfulness, unity, and patriotism in the school chorus and in history; industry and concentration in the daily explanation and solution of problems in physics, mathematics, etc.; honesty and integrity through the lessons in biography and n history, and incidentally, through the occasional reviews of previous lessons, where neglect or indifference becomes manifest; and through the regular and periodic promotion from grade to grade as a reward for honest effort. What better array of force for the eaching of morality by hidden influences can be made? Never in the history of our Republic have there been more.

An investigation for the forces inspiring all or nearly all of the happy homes of our land, for the attributes which lead to the selection of the confidential employees of stores, workshops, counting-rooms and public offices of honor, will convince the critic that the public schools have been the inspiration to the morality which prompted the child and developed the better character of the adult. Never in the history of our Republic have there been more evil tendencies to overcome as a result of the peculiar financial, political and social conditions of the times than now, yet the standard of citizenship, the moral condition of society, and the feeling of patriotism are to-day higher than ever before, and the present American youth, both the boys and the girls, will not suffer by comparison with those of any period or of any land that may be chosen.

Reports Of Pupils' Standing.

By Albert Shiels, Principal Public School 125, New York.

THE subject of wasted effort has ever been a theme to the moralist, and ingenious thinkers have speculated upon the great results that might have been accomplished by the misdirected and fruitless labor of a single life.

In our profession the student of education who is seeking a new subject for investigation might well inquire how much energy we teachers waste, how much time we lose in examining unnecessary papers, compiling useless data and in preparing reports not actually required.

It is a lesson that cannot be too frequently emphasized: men and women who really teach—the most exhausting of labors—cannot afford to waste time in fruitless effort. Not alone is there teaching to do; there are study and collateral reading and the necessary clerical work; roll-books, plans, programs, reports on progress, and other details. It is, therefore, an important question of school economy, are reports of pupils' standing necessary, and if so, how may we minimize their contents?

There are three direct personal factors to be considered, the teacher, the pupil, and the parent. How far is a school report of this kind necessary for each of them?

The knowledge of a pupil's condition, the teacher already possesses not only as contained in the roll-book, but even more accurately of his own personal knowledge.* Punctuality and attendance are already recorded, and there are few teachers who cannot accurately recall the precise deportment of each of her charges, even in a large class. We may, therefore, assume that a special, separate report of this kind is unnecessary for the teacher.

It is certainly desirable for a pupil to know his teacher's estimate of his own progress, but his opportunity for discovering his errors in certain exercises (as arithmetic and spelling), the criticism he daily recitation and, on special occasions, the little private k after 3, all give him this information by which he may gain consciousness of inferiority and thus receive a stimulus to prove.

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* It is not the province of this article to inquire how marks may be obtained. One method I suggested in an article "Marks and Examinations." Vol. I. Nos. 3 and 4, New York Teachers' Quarterly, edited by Sidney Marsden Fuerst.

For the pupil therefore an additional report is not essential.

But such a report *is* necessary for the parent. To know that child is doing satisfactory work, or that he is losing the oppor- ities of his school life is a parent's *right*. If he neglects to act the information he receives, the fault is his. To hear nothing five months is at least to assume that things are satisfactory; to n at the end of that time without previous notice or warning t the child has failed of promotion gives both father and mother und for complaint.

Granting, therefore, that parents should receive such reports, are confronted with the considerations of the first paragraphs. w can we make such reports so as to entail the least labor? The e required for compiling them depends on

a. On the number of children who receive reports;

b. On the frequency of the reports;

c. On the contents of each report;

a. Should a report be given to each pupil or only to those ose progress is unsatisfactory?

On the one hand, it may be argued that a report for each pupil unnecessary; that so long as the parent hears nothing, he may ume that matters are going along smoothly, and that so much or is saved to the teacher.

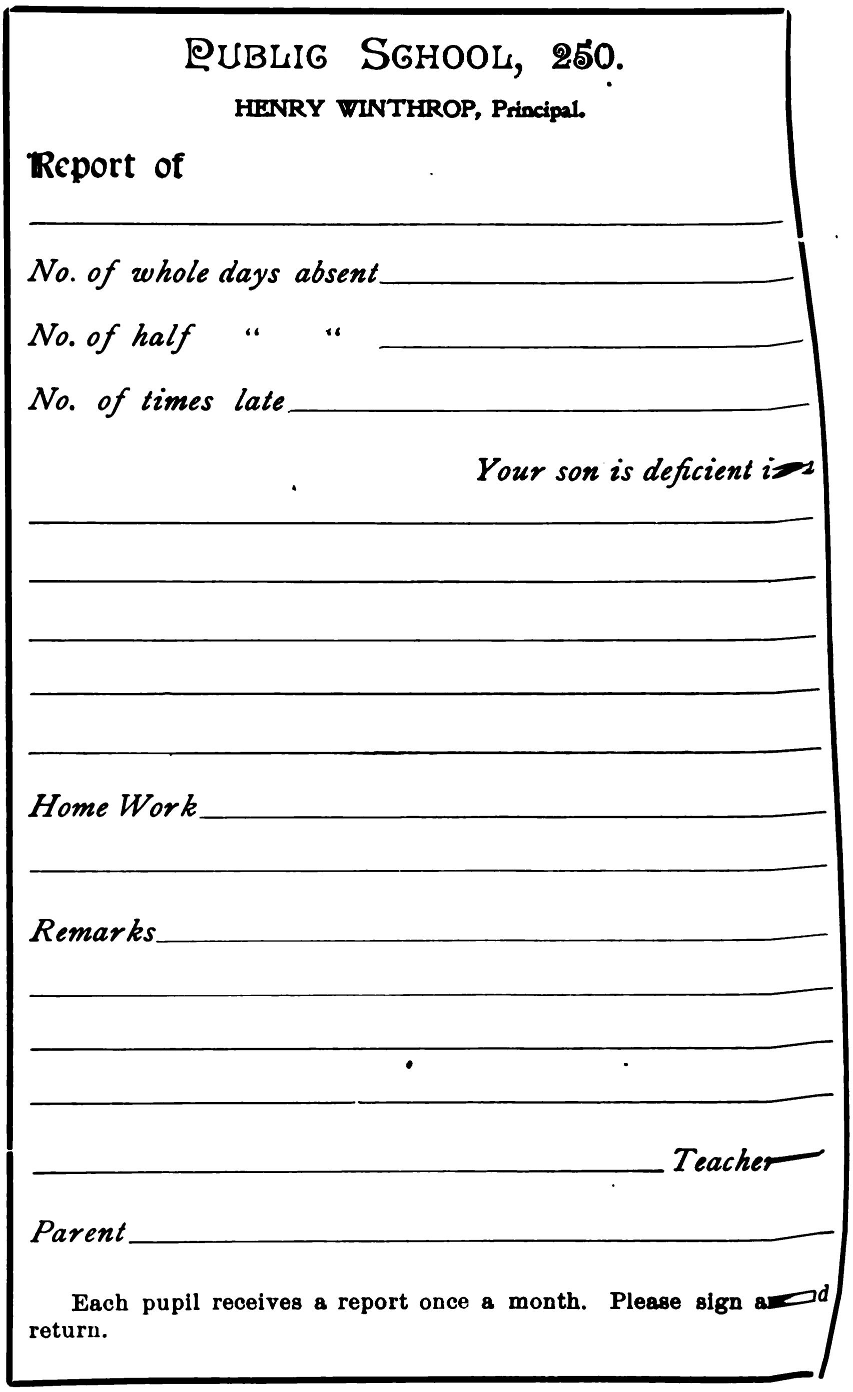
On the other hand, the distribution of reports is better system- zed when each pupil receives one. No further responsibility ts upon the teacher to ensure its delivery; it is the parent's duty demand it from the child. Again, though it takes longer to write reports than 10, there is some real gain in the more careful ught concerning each pupil's condition.

b. Should reports be sent weekly, fortnightly, or monthly?

If these reports mean anything, and the entries are the result mature judgment and not of a chance examination or recitation, e a month is, I think, the correct interval. I have seen them sent e a week; there is grave danger of a perfunctory filling in of nk spaces when there is so much to do. It may be objected that onth's interval is too long, especially, in case of a pupil's sudden ure or serious breach of discipline; but for such extraordinary es a special letter might be sent.

c. The contents of the report are most important, but they end on the grade of the pupil and in a degree on the neighbor- d of the school. There are localities where only the simplest glish adjectives may be used and where the reports might with vantage be printed in another language.

The following is one form of a report:



PUBLIC SCHOOL, 250.

HENRY WINTHROP, Principal.

Report of ______

No. of whole days absent ______

No. of half " " ______

No. of times late ______

Your son is deficient in

______

______

______

______

______

Home Work ______

______

Remarks ______

______

______

______

______ *Teacher*

Parent ______

Each pupil receives a report once a month. Please sign and return.

The headings need no explanation, except "Home Work" and "Remarks."

Home Work.

This is important in the higher grades and is peculiarly under the parents' control. The written work (there should never be too much of it) should be criticised as to completeness and neatness. Some children are apt, when bent on some particular pleasure, to say there is practically nothing to do and a query may be made, "Does your son study 45 minutes a day? It is necessary;" or "John's deficiency is due to neglect of preparation at home." Many teachers will recognize the necessity of some such note as this, "Harry says that home errands prevent his studying." It is apt to go ill with Harry when his father learns what his son has been saying.

Remarks.

Under this head breaches of discipline may be entered, but the time-honored heading of "deportment" has been purposely omitted. It is of advantage to assume that proper conduct is the normal condition of the school, as is certainly true of the great majority of the pupils when properly taught. When the parents are intelligent such adjectives as "Bad," "Disorderly," "Unsatisfactory," "Talkative," are abstractions which give them very little knowledge on which to work. In making fuller entries we must remember the teacher's position; this is not exclusively one of anger with the child because he disturbs the class, but solicitude as well, for his welfare and progress which are being seriously imperilled by his own misconduct. It is very difficult to state in three lines just what the child's trouble is, which is another way of saying that intelligent parents and teachers cannot work together for the child's improvement by correspondence alone. Personal conference and mutual sympathy in working towards a common object are necessary. Although we all know the unreasonable parent and the hysterical parents, they are not general types.

Subject therefore to the limitations of a report, such remarks as these may be made.

"William plays tricks on other boys. During this time he misses instruction and so spoils his chance for advancement.

"Harry spends his pocket-money for playthings which interfere with his work" *i. e.*, let the faults be concretely presented.

Subject to the approval of the principal it might be better to say:

"Harry's progress suffers from certain faults; if we could consult together it would benefit him."

It is a good rule, especially, in the higher grades to have the child admit the fairness of the report; if necessary, when it is unfavorable, we may talk the matter over with him privately. Let him acknowledge the justice of your strictures; if the class has the right spirit a teacher may even withdraw a charge on the pupil's private insistence (politely and reasonably expressed) if the latter feels it unfair. As in every rule, there are occasional exceptions; in such cases, without show of feeling, I have told the boy I cannot agree with him and have advised him to repeat his contention to his parents.

Nothing has been said of praise, and judicious praise is a great lever. Whenever we can observe an improvement we should note it on the report; a sensitive child, particularly, will be deeply stirred by the quiet recognition of his own efforts. Pretended sympathy in a child's welfare, and unmerited praise, are both dishonest and dangerous.

Some such note as the following might be printed on each report "We welcome the visits of parents. Personal interview will aid us both in accomplishing our common object—the mental and moral well-being of your child."

In conclusion, I wish to repeat that all these reports to parents assume a degree of intelligent interest on the part of parents.

In these cases where we must work not with the parent, but *against* the influence of an idle, brutal, or drunken father or mother, appeals for cooperation are utterly inappropriate. The teacher then reaches the highest dignity of her professional duties. She is not teacher alone but friend and guardian. There are such cases today in New York, and there are teachers who deal with them; women, who with firmness and loving smypathy are training the lost children of hopeless homes to lives of honest manhood without blare of trumpet or beat of drum. Upon School Reports and the cooperation of parents they can not depend; how great their contributions to the well-being of our community have been, only the Recording Angel knows.

The Incorrigible Boy.

By Julia Byrne, Instructor, New York Truant School.

ONE of the most encouraging signs that mark the tendency of the day towards preventive measures, is the general awakening to a recognition of the needs of that portion of the chool population, whose conditions, tendencies, or habits are uch as to place them beyond the reach of ordinary methods and estraints. In the main, the victims of unfavorable circumstances so overwhelming for them to combat unaided, their training to useul lives demands the expenditure of special attention and thought.

Putting aside that class of boyish pranks arising from occaional uncontrolled impulse, or from a transitory phase of mental nd moral development we find deep-seated beneath the more serius cases of incorrigibility, the same causes that underlie the commision of the more flagrant offences of adult criminals. It is essential, herefore, to the interests of society in general, as well as to the enefit of the boy, that the youthful offender should be checked in is course before criminal instinct and lawless impulse have become riminal habits.

It is not an over estimate to say that nine-tenths of the cause of uvenile depravity may be traced to parental weakness or neglect; neglect which, while not necessarily conscious and deliberate, is none the less fraught with evil consequence to the child. Involved n the fierce struggle for existence, the drudgery of providing for material wants may be so slavish as to preclude the father's giving due thought to the moral and social well-being of the the boy. The burden of the family, the care of the household, and ill-health may unite to deprive the child of maternal solicitude and tenderness. The loss of one parent may place a double responsibility upon the shoulders of the survivor. Intemperance and its attendant train of evils may conspire to rob the home of the peace and unity that should reign there. Inadaptability to new social conditions, gnorance of the language of the country and of the perils and temptations that beset the youth, may incapacitate the foreign parent, in some cases, for the entire fulfillment of parental obligations. All these causes contribute in a marked degree to increase the ranks of the neglected, and it not infrequently happens that the parent thinks lightly of the obligations devolving upon him. He fails to see or to restrain the faults of the child until they are firmly engrafted. Then his usual resort is to a mode of correction, or rather punishment, which results only in arousing all the brute antagonism of the child's nature. The inability of the parent to control the child is in itself the strongest argument against the posibility of the child's having sufficient force of character to rise superior to adverse circumstances. Education must rescue him from the effects of unworthy environment, evil association and inherited peculiarities.

As a rule the parent, however incapable or indifferent, makes some little effort to shield the girl from contamination Naturally the duties of the household engage her to a certain extent. But under the artificial conditions of city life, there is no groove into which the boy may be made to fit. The home offers no opportunity for the exercise of his activities, and he is allowed to find refuge from stagnation in the street, seemingly with no obligation placed upon him but that of keeping out of the parents' way. The street is an inadequate playground; it is a demoralizing school. In it he learns lessons of viciousness that are not easily eradicated. The freedom of the street engenders a love of the street and its associations, and tends to make the boy chafe under the restraint of the class-room. Revulsion against order and discipline and application to study in turn lead to evasion of attendance, generally the initial step in a wayward career.

It is manifestly unjust and unreasonable to hold this gamin of the streets equally accountable with the boy whose childhood is surrounded by care, comfort, and devotion. Put side by side, the latter will distance the former, not because of superior intellectual endownment, but because in the home of superior culture and refinement, he receives a training that enlarges upon the work of the school. In one case attention, obedience, and orderly habits in the home prepare the boy to submit to the authority of the school. Irregular habits, insufficient nutrition, a barren home life, and probable circumstances that weaken self-respect may make the other outwardly repellent and inwardly rebellious against his limitations. A feeling of personal hopelessness and war with the world, a fore-warning of his liability to drift into the great ranks of unclassed who degenerate into criminals or dependents, frequently characterizes the incorrigible. Generally he is weak rather than inherently vicious. He plods along at the suggestion of companions stronger in will, or more advanced in evil, and when placed under restraints that make wrongdoing difficult tends to lapse into a state of ox-like passivity. He must be made the subject of a special mode of procedure in the line of intelligent self-control. We cannot strengthen the weak will by a discipline that obliterates the will. We must lead him on through right feeling and right thinking to right willing and right doing. His emotional side must be cultivated. It is said to be characteristic of the criminal class that they are almost devoid of the sentiment of pity. We must, therefore, look to the special cultivation of this sentiment. We are too prone to seek extraordinary means in dealing with our culprits. We can rely upon the sense of personal closeness to the teacher as the most important element in inspiring o right conduct. The educational powers in all our great cities ow recognize the necessity of strengthening the school system by naking special provision for one class of delinquents, those whose ffences are of a nomadic character. As such offences lead to the reatest of all temptations, opportunity, to the commission of faults nore serious, the wisdom of this provision is evident. But do we ot need to go a step further and make provision as well for those ho are liable to go astray ? We find scattered through the lower rades of our schools a very considerable number of boys who, far eyond the average or schedule age, are yet unfitted to move abreast vith boys of their own years. It is mostly from them that the anks of the incorrigibles are recruited. They are generally a ource of demoralization to the younger boys and thorns in the side f the teacher. The methods and instruction adapted to younger pupils are not suitable for them. Boys varying widely in years will not advance under the same regimen. If the backward boy cannot keep pace with those of his own years, he should receive special help. In an overcrowded city we cannot hope to attain the ideal in classification. In the school system, as in our own systems of transportation, we improve the facilities only in time to face new eeds. The child whose home life is favorable, who has been rained to some degree of self-helpfulness, and whose environment osters ambition develops satisfactorily under present conditions. ut it is a matter of justice to him and to the teacher taxed with xtraordinary numbers that the class should be weeded of the ratic, the conspicuously deficient, and the physically defective. hey are a drain upon the substance, the weak link in the chain. he most practicable solution of the problem is the establishment special, or ungraded classes, so limited in size that the instruc-on can be adapted to the needs of the individual. This would rovide a place, also, for those so defective of hearing or sight as to a drag upon the regular class. To be assigned to a class of that aracter should not stigmatize a boy more than the present system leaving the overgrown boy in the lowest grades. In a neighbor-g city where these special classes were not welcomed in the regu-r school, they were transferred to a rented dwelling and the work oceeded with most gratifying results. Small day schools organ-ed in this manner, where the misfits could find a permanent and ppy school home would, undoubtedly, be most useful.

We must look into the future with these boys and inspire them th a realization of their personal responsibility. What we do for e character of the boy is the thing that counts. Intellectually we ay not achieve brilliant results. We can at least teach him to use oks and to enjoy them. We can bring a little sympathy and joy to his life. We may be satisfied if we can move him "to be hon-t; to be kind; to make the family happier for his presence; to enounce, when that shall be necessary; above all, to keep friends vith himself."

The Principal's Part In Maintaining Class Disci
From The Point Of View Of The Class Teac

By Oswald Schlockow, Instructor, Public School 147, Manhatta

THE public school, like animated nature, is subject to laws of development. Here as in the biological re find a progression from a single unit to constituent e wedged together into an organic whole which seeks to a closer adaptation to the environment with less expendi energy. Compare the single-room country school to the c city school with its fifty classes. How much more complex parts, how much more diversified all its products! Yet it i noted that in this progression from homogeneity to hetero the unit (the classroom), just as in organized beings, has retained a great many of its original powers, surrenderi such as were necessary to secure the well-being of the whol ture. It will consequently be our endeavor to define the which the higher control centre, the principal, can properl cise in carrying out the aims and purposes for which the exists.

NEGATIVE ASPECT OF THE PRINCIPAL'S RELATION TO CLAS PLINE: THE RECOGNITION OF THE TEACHER'S INDIVIDUA

The biological parallel teaches us to define the pri powers. He can properly demand such subordination teacher's class management as will permit him to secure co tion and harmony between the different classes of his depa the result of which must redound to the welfare of the d classes, or the restriction of the teacher's power is not ju Everything that pertains to the school in general—as ra missals, assemblies, etc.—must be made to conform to his just as the different parts of the muscular mechanism are c ated by centres in the cerebro-spinal system. But whe such coordinations have been made, the principal's just d for further change in proper class management should cease.

Dr. Virchow discovered that disease means a change o tion in the animal cell, and consequently the health of th depends on that of its component units. Similarly the wel that other organism, the school, can result only from the wel of its vital elements, the classes, which in turn can be secure y a proper display of the teacher's individuality. Without this a hool becomes a lifeless automaton in which the principal is the ropelling force. How strange that writers should have emphazed over and over again the need for a proper manifestation of e child's spontaneity, without accentuating the implication, that e individuality of the teacher is as sacred as that of the child. is time for some reformer to proclaim the rights of the teacher, d to issue a series of injunctions against intermeddling principals.

Nor need this statement cause alarm. A closer scrutiny will veal that the individuality of the teacher cannot be suppressed y more than water can be made to flow up hill without the aid of achinery; remove the propelling force for one instant, and the ater rushes back with redoubled fury to regain its former level. o one can act contrary to his nature indefinitely; personality ay be suppressed for a moment, but it will reassert itself at the rliest opportunity. The mere substitution of the principal's tions on discipline will not suffice to produce good results, for a ethod productive of the greatest good in one teacher's hand will ten prove a failure in another's. It requires a certain undefinable wer, a mysterious force, to use any method successfully; the tter becomes dead when this something—the teacher's individuity—is wanting.

Moreover, diverse conditions prevail in the different classes. ge, temperament, and hereditary tendencies vary in the different ades, and can any one claim the wisdom to formulate a system of scipline universal in its applications? If such discovery has been ade, what a pity that we should still be left in ignorance of it. not the teacher, and he alone, the proper person to decide what eans are best fitted to secure the best results in class management?

But what about the poor disciplinarian? Shall we permit his dividuality to ruin the class and the school? Certainly not; but ither will it do to discontinue his methods of government and to bstitute those of the principal. A method can not be imposed mply from above; it must be incorporated into the very being of e teacher. This process is a slow and difficult one. The mere jection of nutritive material into the arteries does not necessarily ply assimilation by the body; on the contrary, death will generly result. So with fiats from the principal. The remedy should ther be for the latter to study the methods employed by the weak acher, and then, without any display of infinite wisdom and periority, to suggest necessary modifications. Retain all the od, give time to assimilate the new accretions, and the resulting ethod will be the teacher's, and his alone. All this, however, quires a man at the head of the school who is broad-minded ough to see the good in even the poorest of his teachers; it mands a man of tact and ability to convert the poor into the tisfactory. Reform is more difficult than revolution, but the results of the former are generally more lasting, as they become vitally connected with the organism which undergoes the change.

The free display of the teacher's individuality will be productive of good effects on the pupil. The manometric flame is left unaffected by all sounds except those which vibrate at a certain rate. So with the human being. One teacher's personality may cause a chord to vibrate in the pupil's nature, whose harmony will be an everlasting source of delight; all other teachers will simply leave such pupil unaffected. If there could be a uniform method in a school, only a small per cent. of the pupils would be reached; but with various methods existing (for method is the manifestation of personality), the child must come in contact with some teacher whose genial influence will cause his being to develop and to put forth the blossoms which will engender the fruits of a more perfect life. May not these considerations be a partial explanation of a fact well known to all of us, why some of our former teachers loom up clearly above our mental horizon, while others occupy the pale realm of dreams? The manometric flame of the child's soul, the vibrating chord of the teacher's personality.

The view of the principal's relation to class-room discipline has thus far been negative, which does not however deprive our deductions from any of their value since many of the laws which regulate the members of society in their intercourse, and even the Decalogue itself, consist merely of a series of injunctions. Our conclusions have been: 1. That the principal shall not repress the teacher's individuality in class-room discipline, except in-so far as may be necessary to maintain properly co-ordinated movements between the classes while functioning together as an organic unity. 2. That if any weak points in a teacher's discipline are discovered, the corrections should consist in modifications which must be gradually incorporated into the old series of ideas (true apperception) so as to become part and parcel of the teacher's mental make-up and not simply a lifeless accretion imposed by the higher authority of the principal. 3. That such individuality cannot be repressed for an indefinite length of time as the natural personalty of the teacher will endeavor to assert itself at the earliest opportunity. 4. That this individuality should not be destroyed, even if it were possible, as it conduces to the welfare of the pupil—the main consideration of all school systems.

SPECIFIC CONSIDERATIONS.

The principal, besides granting freedom to the teacher, should institute such a plan of general school order as will re-enforce and strengthen the governing power of the class. It is truism to state that the principal shall not, in any manner, oppose the teacher before his class, shall ask permission to address the pupils, shall show the utmost deference to the teacher on all public occasions.

Moreover the assembly in the main room may be made a means to aid the discipline of the several classes. Lessons in obedience, order, punctuality, and patriotism may be made to supplement the work of the class-room. In all these ways the principal can assist in lightening the work of the teacher, but he cannot substitute his activity for that of his subordinate; the latter must be left to work out his own salvation.

Yet it must be remarked that the freedom advocated is not the freedom of caprice. Freedom implies law, but a law internal to the activities and manifested by them. The principal should watch to see that the methods of discipline are not applied fitfully and without aim; they must be trained to display the law inherent in them, not to conform to a standard outside of them; the latter is coercion, the former true freedom.

By what tests shall we judge a principal's success in school management? When there is that harmony between principal and teacher which avoids all friction and subsequent loss of nerve force, when the principal does not set himself up as the infallible source of all authority, when his personalty causes the teacher to put forth all his power to bring about the success and well being of system of which he is an organic part; when both principal and teacher are willing to subordinate their individual desires for the good of all. This condition, though perhaps nowhere existing, should be the goal of all efforts to secure a more harmonious relation between principal and teacher.

CONCLUSION.

After careful reading of the preceding remarks, a candid critic called attention to certain abnormal conditions in class-room experience which ought properly be brought to the notice of the principal; this gave use to the following brief statements, merely hinted at in the general scheme of the foregoing article.

Physiology lays down rules of action conducive to a proper functioning of the body; yet with all due precaution disease will seize the healthiest structure and it may become necessary to apply heroic measures to combat an insidious foe who may otherwise cause the death of the being. So it is in the class.

A proper regard for the underlying principles of psychology, n the broadest sense, may generally secure a harmonious and healthful interaction between pupil and teacher, but pathological onditions will arise; obstinacy, impertinence, even insubordination, may occur. Whether these can be avoided, is not the question; it is a condition that confronts us, not a theory; they occur. To combat them with the ordinary means at the disposal of the eacher may prove inefficient. What can the principal do to comply with all the requirements of justice?

The principal has two duties to perform: First, to deter others from committing a similar offence; secondly, to reform the offender. The principal can secure the first only by supporting the teacher. The teacher represents a fractional part of the system; by taking the pupil's part the authority of the one teacher is undermined; as all teachers are placed on a par by the pupil, a simple process of reasoning will lead to the conclusion that similar immunity will be granted to the offenders of other classes, the general discipline of the school is sure to suffer, for no principal can dispense with the co-operation of his teachers; his own authority will be very short-lived after the disappearance of that of his teachers.

If it should be found that the teacher's action provoked the disorder, the remedy must consist in an attempt, on the part of the principal, to modify the teacher's view on the general subject of discipline; but the pupils must not be upheld. To do so would be to encourage others to take their chances in being exonerated, and nothing brings law into greater disrepute than uncertainty in the manner of its application.

Secondly, after the principal has publicly shown his intention to uphold the teacher, what shall be done with the pupil? Here the roads diverge. After a period of severe discipline the pendulum has swung in the opposite direction, and we are rapidly approaching a period of soft "pedagogics" in discipline. Moral suasion is the shibboleth of the army of reformers who have probably never become acquainted with the real product of the slums of our great centers of population. Far be it from me to deny the potency of an appeal to the moral nature; but is this a universal remedy? Psychologically such statement seems to me most unsound, as morality is based upon insight, to which is added a will responsive to proper motives. Are all the pupils endowed with these elements? Is moral suasion consequently to be applied indiscriminately? Would you throw pearls to swine? The pupil who is least amenable to reason, and who most rebels against the discipline and order of the school community, is generally the one subjected to the namby-pamby talk of principals. The principal who sends a boy back to his class after such goody-goody talk is simply making himself the butt of ridicule of all offenders. They can stand such five-minute sermons as long as he has strength to deliver them. Nature's punishments are accompanied by pain and discomfort, but modern education tends to render punishment a luxury.

Many remedies are at the principal's disposal. Parents, public reprimand, the public opinion of the school may be invoked against the offender. Yet there remains a remedy which, while vested in the principals of New York City, is rarely, if ever, exercised—expulsion. The teacher's heart-blood is often shed, and the rest of the class frequently neglected, simply to render one incorrigible rmless. If the principal would only avail himself of this power, w the moral tone of the school would be changed! But unprosional rivalry prevents this consummation so devoutly to be shed. If the principals would present a united front on this bject, they might effect a change in the public view—which holds a school only from in front the foot-lights, but never hind the scenes. Expulsion should not be employed except as a st resort, but it should be used, and I fear, more frequently than present. One really bad character in a class, like the attribute cribed by Satan to the mind,

> "Can make a hell of heaven!"

d when moral suasion has failed, the offending member should be t off in order to save the class and sometimes even the school om destruction.

The Incorrigible Child.

By E. C. **Bruce**, Superintendent New York Juvenile Asylum.

IN 1898, anthropoligical investigations were made on 1000 children, taken promiscuously—white and colored—covering 17 nationalities other than those born in the United States. Of those born in the United States it is safe to say, that sixty per cent. were of foreign born parents.

Out of this large number of children, (700 males and 300 females) 72 males and 5 females could be placed in the criminal or vicious class.

The preponderance of males over females among the children with decidedly bad characters, is remarkable. Yet still, according to the measure table, these criminal or vicious children show no general physical inferiority. There were, however, a few individual exceptions.

As to the parentage of this class, 19 cases, or 27.5 per cent. of the whites, were of American parentage, 18 cases, or 26 per cent. were Germans, 14 cases, or 20 per cent. were Russians. Of the whole number of children examined, 19.5 per cent. were Italians. Considering the large number of children of this nationality, but one was found who.was considered of the vicious class.

As a result of these investigations, we are brought to the conclusion that the misbehaved children are not as a whole characterized by any considerable physical inferiority, or any great proportion of physical abnormality. Consequently, the causes for bad conduct and character must be looked for elsewhere. It is not so much due to their constitution, as to their social circumstances and environment.

The itemized causes of the commitment of the children of this class, is as follows:

Petty larceny and pilfering, 36; burglary, 6; stealing, 3; assault, 2; attempted theft, 2; grand larceny, 1; pocket-picking, 1; attempted burglary, 1; committed as ungovernable, 25; total, 77.

Since these children have been in the institution, 75 out of the 77 were found to be entirely tractable, and have behaved satisfactorily. The remaining two are sneaks, cowards and liars.

As to the abilities for learning, 10 were found inferior, 2 were very bright, and 65 were equal to the average ability of children outside.

Out of the 10 children with inferior abilities, 6 were committed for greater transgressions—pilfering, assault, larceny and burglary; 4 were ungovernable.

Taking all this into consideration, the criminal and vicious subjects show very favorably, that with the proper treatment, and a iciently prolonged sojourn in a domicilary school, so that new its may be formed, that there is great hopes for their future.

I have quoted thus freely from the annual report of the New k Juvenile Asylum for 1898, and the scientific investigation and pilation of Dr. A. Hrdlicka, to show that the bad child, the rrigible boy, the vicious and wilful girl, is not *sui generis*, but wful product.

Parenthood has as much to do with the mental, as with the sical characteristics. Children have defects to be sure, but they the result of inheritance. A peculiar physical abnormality, ugh as slight in character as a whirl of hair, may extend through erations. Mental characteristics often run a like parallel. Such ormalities may be intensified by the home life and social sur- dings. From their earliest days, so many children are taught onest practices, by example, and even precept. Is it to be at wondered at, that they have an utter disregard for the property thers, and the sacredness of the truth?

In too many cases, the incorrigible are made so. Oftentimes its are formed and tendencies exerted before a child is a year —yes, even six months old—that may last him through the nal period of life. The infant who is allowed to have his own , develops a selfishness which is at the basis of incorrigibility. have seen that child in the public conveyance scratch and kick dig until he obtained from the parent or attendant what he red—never receiving what he deserved. A step further in life, oes not want to go to school; he becomes a truant; he is allowed ave freedom of his time at night; his education is obtained on street with all its evil tendencies, until he is overtaken in his t, when his downfall may be complete.

As has been stated before, from the observation of such a large ber of children, very few are found upon whom some impres- for good cannot be made.

It is an axiom in agriculture, that the ground that produces ds, can produce something else. It is simply a question of tly applied energy. It must be of the proper kind. All soils not alike, no more are children. What would answer in one , as far as detail of management is concerned, might not be licable to another. However, the basic principle of all methods t be implicit obedience. The firmness required to engraft this upon the child mind, must be tempered with kindness and ice, with the highest regard for the truth under any and all cir- stances. In due time, the child mind will respond to such ences. You will find him doing better things, and with higher ives. Not all children can be won to better doing by the hope egard or upon purely ethical lines. Very often, at the beginning element of fear must occupy a very important place. While e is reward for good, there must be punishment for evil.

Individually, both can be meted out. Whatever method is pursued for correction and reformation, the sooner the child can be brought to realize that you are willing to trust him, the sooner the germ of hope will burst from the sterile conscience.

Many instances can be given, where better influences are shown, even in most unsatisfactory and unpropitious cases.

Let me speak of a boy 13 years of age, committed for larceny, who found a sum of money—over thirty dollars—and restored it to the owner, who did not know he had lost it. This money could have been retained by the boy without fear of detection.

Another one, a boy surrendered for the second time, ungovernable, expelled from the public schools ; a boy who was a sneak and liar, really, a juvenile anarchist, always against the government. How he chafed under the discipline of domiciliary school life, simply because his personality was lost. He was no longer able to place emphasis upon the personal pronoun. It took him some time to get his body under subjection, a longer time, his egotistical will. But when by kindness and firmness, he was shown there was grace in submission, his mind awakened, he commenced to see possibilities, his schoolwork began to be good, his industrious application increased, and life to him became something more than a selfish idea.

Finally, the incorrigible boy is like a skein of yarn in a tangle. How easy it is to tangle a skein of yarn! You can hardly tell how it happened. It is so difficult to straighten it out. Often the attempt to remedy it, only makes the matter worse. Yet without the effort to unravel, its uselessness continues.

To deal with a thoroughly bad boy, presents an analagous condition. It is often hard to tell how he became bad. What influences were or were not exerted to make him so ? Since he is bad, he will become worse unless some judicious attempt is made to correct his moral deformity. At the present day, the governmental or corporate domicilary school offers the best advantage. Wholesome restraint soon ceases to be irksome. Education is combined with industry, regularity of hours, school, work, and play. There is careful attention to bodily hygiene. Strict nocturnal espionage is of the last importance.

Whatever method may be pursued for the reclamation of erring youth, and the theories are many, for no two authorities approach the subject from the same point of view—it is well to get the confidence of the boy. No matter how difficult it may be, or how long a time it may require, the child, by experience has confidence in no one ; his egotism has always been supreme. When you can get him to believe in you, the work of reform has commenced. You will awaken hope. generate a desire to be better, and from this to *effort* is but a short step.

Improving Personal Appearance.

By Cornelius D. Fleming, Instructor, Public School 125, New York.

THE following, which may prove of service to other teachers, is the record of an experiment in the formation of right habits.

An understanding of the writer's position regarding habits may be opportune. Habit fixes action in a certain, well-defined channel. There is a physical repugnance to a new order of things. Thus it will be seen, habit is opposed in a measure to development, yet habit is necessary to a further development. It is highly important that a correct intellectual view be presented to the pupil at first, as it is desirable to get him in such a condition that he is scarcely conscious of performance, practically automatic. Once having done a certain act, as combing the hair or brushing the teeth, there is a tendency to act again in a like manner. The inertia of the initial performance having been overcome, there is less resistance thereafter. As one writer aptly expresses it, "It is easier to fold a piece of paper along a former crease than in opposition to it."

An abstract discussion apparently leads to no end. Concrete examples are easier of comprehension and more satisfying to the general reader, so an insight into the personality of the boys on whom the experiment was made is necessary at this point.

The boys were all Italians, in their fifth school year, of the average age of twelve. A majority of them were born in Italy, and some retained in their speech a strong trace of their Fatherland.

Seemingly they were wholly without good habits. Of course this was not so, but the preponderance was in favor of undesirable habits.

In appearance the boys were unkempt, untidy, and dishevelled. Dirt was their striking characteristic; their hair was uncombed, and their teeth, from lack of brushing, were painful to look at; their shoes were never polished; a strongly marked line running under their chin and neck showed the limit of the daily wash of the face; their hands were black from lack of washing, and their finger-nails were repositories of dirt. Flannel shirts and sweaters were the mode. Neckties and collars were not looked upon with favor. This a youth felt who appeared with collar and tie, and who was unable to withstand the prevailing sentiment of the class, and so turned up the collar of his jacket in mute but eloquent apology.

Fully two weeks passed before any attempt was made to change their habits. Correct habits can be more readily formed if the powerful ally of the feelings be brought into play Their trust and confidence in the teacher convinced them of his good intentions and produced an anxiety to try and please him by doing what he wished. Orders were carefully refrained from. No command was issued to the class to have their hair combed, but one lad who unexpectedly showed a combed head of hair was made use of as a starting point. The praise given the lad aroused the spirit of emulation. Imitation succeeded as shown on the following day by the large number of boys who appeared with their hair combed. The initial stimulus had been given, but they were a long way from the possession of a habit of hair-combing.

A talk to them of the importance of the teeth in the process of digestion and the necessity of caring for them, together with simple directions as to the manner of brushing with a cheap and harmless powder followed. Precipitated chalk was selected because it would whiten their teeth quite rapidly.

At this point, I used the time-worn device of credits. If a boy showed by the condition of his hair that he had combed it that morning, he received a credit. If his shoes were polished, teeth brushed, and if he wore a tie or a piece of ribbon doing service as a tie, he received a credit for each item. Demerits were not given out for the absence or neglect of any of the above particulars. These credits were given out at a fixed time each day, thereby helping the formationof the habit of regularity. The credits earned during the week were made public each Friday afternoon.

Credits led to a place on a roll of honor hung upon the wall. Space was provided for twelve names, and as there were twenty-seven on register, nearly half of the class was eligible. This made the honor not a cheap one obtainable by everyone, yet it was not too restrictive.

Believing that the readers of the MONOGRAPHS are more interested in the method employed than in the result obtained, the writer will briefly summarize by saying that the results were most gratifying and lasting. The improved appearance produced a proper pride which made for better discipline.

In conclusion, it would be well to remember that habits are secured, in the main, by periodic repetitions. The time period between consecutive repetitions should not be too long nor should it be forced. That is, actions should not be repeated simply for the sake of doing something. As for example, a boy should not be required to brush his hair every hour. A natural order should prevail.

Habits are not created at the will and command of the teacher, but in consonance with the fundamental principle of education, they are a growth of slow order cultivated through the will of the pupil.

Cleanliness is next to Godliness. This determined the writer to try to instil correct habits so far as their personal appearance was concerned. The task seemed at first hopeless of accomplishment. But a knowledge of how habits are formed proved at this point one of great help. To set a right ideal was easy. To tell them that their hands, faces, and teeth should be washed daily, their hair combed, shoes polished, clothes brushed, was not difficult, but to get them to perform voluntarily these offices for themselves at stated intervals was, as Rudyard Kipling says, "another story."

No attempt was made until the confidence of the boys had been secured through a show of sympathy and an interest in their occupations outside of school. This proved exceedingly fruitful, as they were only too willing to tell of their exploits. Some idea of the environment and home life of these lads may be gained by their tales Over half expected to go back to Italy and serve in the army the time required by the Italian Government. Christmas to them was the time when unlimited wine would be drank, and more than a half dozen gleefully declared that they proposed getting drunk at least twice during the holidays. No sense of shame or of degradation accompanied this unblushing avowal. It must be remembered that the average age of these boys was but twelve years—the youngest ten, the oldest fourteen. The practice of many on the nights prize fights took place at a so-called athletic club about ten minutes' walk from the schoolhouse, was to stay about the entrance to the building to watch and listen—which probably accounted for the fact that so many were desirous of becoming prize fighters.

Quite a number outside of the embryo pugilists desired to be firemen, but strange to say only two wished to be policemen. Their living was undoubtedly a struggle, as evidenced by the number who during the lunch hour, sold papers. This number was increased by those who sold papers after 3 o'clock, or who worked at tailoring or making feathers until 10 P. M. Home study was practically out of the question. They are cunning and crafty, possess a worldly knowledge beyond their years, but their mental growth is arrested. They seem unable to reason. It is true that they are somewhat younger that the age at which psychologists claim that children consciously reason. It will be seen that the outlook was most uninviting, but all will admit the great necessity for the formation of correct habits and right methods of thinking among these lads.

A good fellowship was established between the pupils and the teacher by informal talks concerning themselves, which proved of the utmost help. It was not done all in a day, but as occasion presented itself, sometimes at the end of a lesson, as a means of mental relaxation. Later the boys were so anxious to relate their personal experiences that they were allowed to do so as a reward for some exceptional lesson.

Lighting, Heating And Ventilation.

THEIR BEARING ON GOVERNMENT AND INSTRUCTION.

By William A. Mowry, President Martha's Vineyard Summer Institute.

THE pendulum swings. The Virginia fence typifies the progress of education. The most difficult thing for a body of educators to do is to move straight forward, or, to change e figure, to "hew to the line." I once heard that prince of matheaticians, Benjamin Greenleaf, say to a company of students, Young gentlemen, always remember that the shortest distance tween two points is a straight line." Our schools are apt, in ery way and always, to make progress by the zigzag line. If the d schoolhouses could tell their story what a horrible narrative it ould be.

An oculist was complimented on his skillful performance of a rgical operation. "Say nothing" said the doctor, "I have oiled bushels of eyes learning how." I fear that the story which schoolhouse could tell would be something of the same kind. Take e simple matter of letting in God's light upon the children, gath ed in the schoolroom for their daily tasks.

In the early days of our country too little light was furnished. he early fathers did not understand the principles of architecture. he windows were small, the rooms were low-studded, hence the indows were low. The slanting rays would not reach across the om. Bushels of eyes were spoiled by insufficient light. The evil, owever, carries its antidote. As soon as men see it they rush to e other extreme. Less than two years ago an eminent educator, noted as "The great authority on the hygiene of the eyes of school ildren," Dr. Cohn, of Breslau, said that "there could never be o much light in the schoolroom." What a preposterous stateient, coming, too, from the most eminent authority on this special bject! What could it mean?

When our fathers had their attention turned to the insufficiency light in the schoolroom they went to the other extreme. They ade large windows and put them on three sides of the room. There ere the cross lights from right and left, there was the light in front, ther of the pupils or of the teacher. The carpenters and builders ad not thought of curtains, shades or blinds. All day the strong nlight came glaring down upon the books and eyes of the poor ildren. They became restless, nervous, inattentive, without nowing the source of the difficulty. From restlessness followed leness; from idleness came mischief, from mischief the sharp tones of correction from the teacher, then the rattan or the ruler was applied, and the one child, all the children, the teacher, the school, were put in peril merely by want of judgment on the part of the builders of the schoolhouse.

One eminent educator apologized for Dr. Cohn in these words: "The meaning of this phrase is not that there may not be at times too much light in the children's eyes, but it must mean that it is easy, when a schoolroom has sufficient window space, to prevent the excess of light by blinds or curtains, while it is not true, *vice versa*, that when there is insufficient window area light can be supplied in other ways. A superabundance of window space will do no harm since it is easy to shut out some of the light. A lack of window space is absolutely objectionable." The trouble with this statement is that it is not true that "a superabundance of window space will do no harm." A superabundance of window space does harm. It should be the aim of every one having to do with the schoolhouse to adjust things so that they will work automatically. You may have curtains, blinds and shades, and they will be quite likely to be closed when they should be open, and open when they should be closed. The children have not sufficient judgment, the teacher is otherwise engaged.

Only a few years since, in making an official visit as a member of the city school board, I took a seat on the platform, by the side of a teacher, the principal of a grammar school. We were facing the south. Directly in front of us were the windows, behind the children. These windows had neither blinds nor curtains, and the strong sun-light fell upon the children's books as they were studying their lessons. Day after day, week after week, month after month, year after year, that teacher had sat at his desk through Summer and through Winter, facing the strong sun-light and making no complaint. I called that condition of things simply barbarous. I made complaint forthwith. The defect was soon remedied. Curtains were put to the windows and the strong sun-light was tempered to the infinite relief of the children and their obtuse instructor. Do not say that this was an extreme case. It occurred in that important city which claims to be the metropolis of New England, the Athens of America. If that could take place there, what may we not expect in the country schools of Maine, the Berkshire Hills, Delaware or Texas?

Most of what has been said concerning the evils of improper lighting would be equally true with regard to the heating of our schoolhouses. Too much heat is quite as bad for the school children as too little. If the temperature is low, complaint will be made and the evil be rectified. If the mercury runs up too high in the tube both pupils and teacher are too apt not to notice it until the harm has been done. If one could examine all the schoolhouses in any one city or in one of the smaller states, not to say the whole country, what a revelation the examination would make. By the primitive method of getting the heat from a huge fireplace, every one knows that one side is roasted while the other side freezes. Happily, long since, that method was relegated to the shades of the past. Then came the box-stoves which for a long time were found in every country schoolhouse. Those over-heated us. Fortunately, modern civilization has traveled far away from that system. It is not usually found in operation to-day. One might be pardoned for occasionally doubting whether our modern systems of heating schoolhouses are really an improvement over the ancient ways. Many a modern schoolhouse has in the basement a huge furnace which takes the cold air from the surface of the ground outside, with all its unwholesome, harmful exhalations and pours this heated air into the schcolroom which has no sufficient ventilation. The superheated air comes into the room, and the air vitiated by having been used by the lungs of fifty children is confined within the unventilated room. Headache, nervousness, uneasiness, playfullness, viciousness, and the results. Lessons are neglected, irritability on the part of the teacher takes the place of sweetness of temper and kindness of thought, good instruction is interrupted and good government is at an end.

It goes without saying that proper, wholesome, physical conditions are essential to proper, wholesome, methods of instruction, and to that order and decorum which is an absolute necessity in any good school. If one should spend the school hours in constantly sticking pins into the flesh of a pupil, how could he expect that pupil to preserve good order and conduct himself with propriety, to say nothing about his applying his mind to the acquision of knowledge. Too much or too little light, too much or too little heat, especially the former, vitiated air from imperfect ventilation, each and all are worse in their effects than sticking pins into the flesh of the children. The one directly tantalizes the body, the other directly injures the mind and hurts the soul.

We are now all, very properly, turning our attention to the study of true laws of pedagogy. We are teaching after a fashion much better than that of the fathers. The modern methods of giving instruction, of unfolding to the mind of the pupil a new subject with which he has hitherto been unacquainted, are vastly superior to those in vogue one or two generations ago, but the question is a fair one whether we are, after all, availing ourselves properly of the light of the present age in relation to these matters of light, heat and ventilation in the schoolroom. I fancy all teachers would better preserve their sweetness of temper, their evenness of disposition, their own comfort and happiness, and especially their success in governing a school and imparting instruction, by exercising the utmost care and continuous attention to these matters of lighting, heating and ventilation.

Public Opinion In The School-Room.

By James C. Byrnes, Board of Examiners, New York City.

John Stuart Mill in his *Essay on Liberty* distinguishes in human conduct between those acts of the individual which affect his own happiness and welfare alone, and those which affect the happiness and welfare of others. The indispensable conditions of social existence are: first, that the individual abstain from injuring the interests of another, or rather certain interests which by tacit understanding or express legal provision, are called rights; second, that the individual give his equitable share of goods and services for the common protection and benefit. Society through the agency of law enforces these constraints and exacts these dues. The necessary relations of the individual to society are established and fixed by means of these enforced obligations. Beyond these limits, however, the interference of society is not sanctioned, and the individual is free—free to labor, to preach, and to worship, free to live as his judgment and taste may dictate. Since however the individual in the exercise of this freedom may so act as to wound the feelings of others, or to cause them inconvenience, or even to threaten their constituted legal rights, society imposes a set of checks and retributive measures distinct from those sterner admonitions and penalties which society administers through the law and the law's agents. These milder warnings may take the form of advice, of disapprobation, of abhorrence, of moral condemnation; they make in fact the force of public opinion. The rash, the obstinate, the conceited, the malicious, the licentious, are visited each in his proper degree by the whips and scourges of public opinion. By far the larger part of human conduct lies solely within the purview of this argus-eyed monitor. Every individual in society is within its jurisdiction, is in fact an officer of its court and subject to its decrees. And while its pronouncements are often tainted by prejudice or passion or corrupted by low ideals and paltry motives, yet it remains the grand regulator of society.

It is true indeed that the analogy between the world and the school is often misapplied by those who seek in the domain of social and political science, the laws of school government. And yet Mill's distinction between offenses punishable by the appointed ority and offenses punishable by public opinion alone, may a value for the teacher in reminding him that authority must appropriate to itself the whole field of the regulation of conduct that something may be left to the action of public opinion ng the scholars.

The influence for evil or good of the prevailing sentiment among pupils of a school is too often ignored. Yet it is constant and erful. There is a community of interest and an atmosphere of pathy among children which make for concerted action and vior. Children do not imitate their elders so much as their s. Anyone who has watched a number of children at play has them run almost the whole gamut of the emotions from grave ay and back again. Children undertand children. From their rades, they learn their first lessons in human nature ; in human ives, impulses, and desires, vices and virtues of villain and e. By personal observation and sympathy rather than by ctic teaching, they learn to understand the springs of human on. Hence arises the forming influence of comradeship on acter. But the child must not be isolated lest this influence be as Rousseau isolated Emile. Place the boy in the best possible ronment without curtailing his freedom, for only by freedom he attain strength of will, power of initiative, and social sympa- Emile, when transplanted to society, would prove a selfish , of strong desires but weak self-control, a prey to every social ptation and vice. The measure of liberty allotted to any people ually proportionate to their fitness to enjoy it without abusing or liberty in society always implies self-restraint. But some e must always be left for free action without other check than fear of losing respect of self or of others. Thus we leave room ny Columbus, Garrison, or Wendell Phillips that enters the d—men who chose to forfeit the respect of others rather than their self-respect. In school the teacher must seek to cultivate ng the scholars a public opinion which will operate as a real in the service of the school. Boys are unmannerly enough selfish enough to express their feelings and desires without ve. Rudeness, falsehood, and other meanness, are common gh among schoolboys to deserve the treatment which a healthy ic opinion affords. And such treatment is more effectual than the teacher can give by means of the whole catalogue of uasion and punishment.

The deference given by children to the common sentiment of comrades, either for good or evil, is often surprising. Instead ithstanding this influence, the wise teacher tries to give it tion. He knows that the pupils are more omnipresent than he that they will discover offences which will escape his notice. nows that the preception of the mote in another's eye enables see the beam in our own eye, and that the scholar learns to correct in himself the faults which he condemns in others. Moreover the wise teacher knows that an attempt to apprehend and punish all infractions of rules and all violations of good morals and manners, inevitably leads to a system of espionage, with the consequent weakness of discipline and contempt for the school.

If the school management, for any reason, has been inefficient, the teacher may find at the outset that such opinion as exists among the pupils is enlisted against the school; that disorder is applauded as boldness; that impertinence is the mark of an idependent spirit: that wilful disobedience and contempt for authority are a species of heroism. In such a situation the state of public opinion among the pupils must be absolutely nullified; authority must be established; obedience must be enforced; the leaders in evil must be deposed, and new leaders set up. For a time the teacher's authority must penetrate everywhere while he gradually creates a public opinion in support of it. If he begins with the pupils who possess natural qualities of leadership and succeeds in moulding their views and sentiments, he has made a good start. In every school there are pupils around whom the other pupils group themselves, who voice the school sentiment, and in a great measure form it. The teacher must work through these leaders in his school; if he can make them his allies, he is certain of success.

It must be remembered that opinion is largely a matter of sentiment, of feeling; and that effective opinion—*i. e.*, opinion which realizes itself in action—is almost wholly a matter of feeling. Too little attention is given in our schools to the cultivation of the emotional side of children's natures; yet the emotions and sentiments probably influence the action of individuals and masses to a far greater extent than mere ideas or reasonings. Of course, emotion always attaches itself to some idea; but it is the energy and depth of the emotional current which spur individuals to action, while mere thought, as in the case of Hamlet, may paralyze action. Teachers therefore should avoid, on the one hand, occasions which call into activity evil emotions; and should seek, on the other, occasions which excite the altruistic emotions and intellectual and moral sentiments. Again, since the expression of a feeling always intensifies it by inducing somatic reaction, the expression of some emotions is to be curbed, while the expression of others is to be solicited. The law of habit prevails here as elsewhere. Now, that which is called public opinion from the intellectual side is public spirit when viewed from the standpoint of feeling. And the surest road to a safe and sound public opinion lies through the cultivation of a strong, moral, public spirit.

When we consider the nature of public spirit we find that it is partly egotistic and partly social; as an egotistic emotion, it is closely allied to pride; as an altruistic emotion, it is allied to love. Hence it arises from a consciousness of worth in ourselves or others.

the pupils therefore believe in the worth of the school, this senti-
ent of pride will appear. It may attach itself to the material side
the school—to the building and the equipment; or to its govern-
ent; or to its teachers; or to the body of scholars. Hence good
ıildings and equipment, a firm yet mild government which always
ɘspeaks a reserve of power, pleasant conditions of work, and, above
.l, an estimable teacher contribute to the growth of this feeling.

While in our city schools the building and equipment are not
ithin the control of the teacher, yet even here they may be made
ı element in the growth of public spirit among the scholars. If
ıe class teacher will enlist the services of his scholars in decorating
ıe classroom, in relieving its bare walls by a picture or other object
interest, in keeping a plant or two, or in maintaining a class
ɔrary, he will excite in the scholars a pride in the room which will
ake a separation from it painful and the protection of it instinctive.
ıis aspect of public spirit is certain to prevent the defacement and
ıstruction of school property. Again, the teacher who permits his
ıpils to take care of the school equipment, to control the class
ɔrary, to contribute to the class museum, gives them an impulse
wards public interest and spirit. Pleasant conditions of work, a
ɘll-lighted and ventilated room, where neatness and order are
ɔparent and sympathy prevails, are sure to create cherished
sociations.

Boys may become attached even to such a stern thing as govern-
ent. They love a firm hand. They have a contempt for laxity of
ıscipline and weakness of guidance. The feeling which prompts
ɔys in a demoralized school to boast of truancy, of mischief undis-
ɔvered, of disrespect unpunished, may easily be turned under a
rm management into a love for promptness, regularity, and strict
iscipline. The "elbow-touch" of the soldier, the sympathy of
umbers moving with precision, the absorption of self in a great
ıovement, are powerful influences toward public spirit.

Emulation between schools or between classes in the same
hool stimulates this pride without arousing the bitter personal
ıimosities which emulation between individuals sometimes excites.
ith the value of such emulation in promoting punctuality and
gularity in attendance most of our teachers are familiar. In
ɔt the prevailing danger here is that the public spirit among
ıssmates which reproves the late or absent scholar, may become
rannical in compelling sacrifices for punctual attendance which
e more to be dreaded than the lateness or absence itself.

But it is around the teacher, his personality and character,
at public opinion in the schoolroom should form. While every
acher is not endowed with that rare gift of personal magnetism
hich engenders in his scholars a sentiment of affection, yet every
acher may win their respect and esteem by deserving it. Children
e much more acute in penetrating a mask than most people give

them credit for. Neither a virtuous sham on the one hand, nor a maudlin sentimentalism on the other, can take the place of an earnest yet kindly nature. The personal example of an esteemed teacher is soon reflected in the pupils. Deliberative human action is nearly always determined by ideals. This fact enhances the importance of the emotional factor, which converts an idea into an ideal. Many teachers rest content by trying to furnish a model of behavior. This is not enough with children. They must see the principles of action to be able to imitate surely. The teacher must aid the moral judgment, which is not, as many assume, purely instinctive. What to praise and what to condemn is not always a simple matter even for adults, and children show much more vacillation in finding a standard in conduct. It is not enough to explain occasionally why one act is wrong and another right; but opportunities must be afforded to exercise this judgment, especially in matters of manners. The teacher must utilize such occasions as are presented to test the judgment of the class. When a unanimity of opinion on such matters as copying, falsehood, bullying, and other faults has been reached and the meanness of these exposed, the teacher may thereafter leave their discovery and punishment to the class. Caddishness of whatever sort, elation over the humiliation of another, fawning on superiors, once exposed, may be left to the public opinion of the school for their correction.

No proper public spirit can exist in a class where the teacher is arrayed against the scholars. He should never rebuke the class as a whole, nor even a group; he must shun arousing any community of sentiment against himself. If he reprove, let him reprove individuals only. If he praise, let him praise all who deserve it. If he recognizes standing in studies, he should not grade the pupils individually, but in groups. Let the rivalry be for excellence rather than for excelling. If prizes be given, let them be given to all who reach a certain standard, and never to one or two. There should be no fag end. A group of pupils should never feel that they are beyond the pale, else there will be two kinds of public spirit in that class.

Another obstacle to the cultivation of a healthy public spirit and opinion among pupils is the discipline of repression, which is expressed in a catalogue of "Do not's," and which never leaves the pupils "on their honor." Discipline should be positive as well as negative, and should evoke spontaneous action of a right kind.

Experiments in so-called "self-government," whereby the mockery of a trial is gone through and punishment meted out by an offender's schoolmates, cannot, I am certain, succeed with pupils below college or university grade. It always ends in a farce, which makes the school ridiculous. There is the form and empty ceremony of self-government without the substance. Real self-govern ent in morals and manners is the government of the individual by mself, which must ever be our true aim.

Where a healthy public spirit can be created among the pupils the higher grades, the effect on the tone of the whole school is ry marked. It should take the form, first of a tacit support of e teacher and the demands of the school organization, and second an outspoken expression and condemnation of the meanness, ttiness, and caddishness of school life wherever found. It should promoted in the playground as well as in the schoolroom, so that e habit of a manly, straight-forward nature may be formed, which ll be a permanent, resisting force in every situation in life, ther than a cloak to be occasionally worn.

Three Types Of School Children.*

By S. T. **Badanes**, Instructor, Public School 21, New York City.

THE most essential demand which we are justified to make of one who undertakes to instruct and govern children, is an intimate knowledge of their nature, of their physical faculties, and the ability to observe individual differences of each pupil.

We purpose in this article to describe some of the principal types of children and indicate the connections that exist between the mental and moral attributes of these children and the home. Of course the results of these observations are as yet very incomplete; still, they may stimulate others to further observation.

The three types to be examined are:

First, the hypocritical type.

Second, the ambitious type.

Third, the good-natured type.

THE HYPOCRITAL TYPE.

A child of the hypocritical type at the time of his entering school is usually distinguished by his modest appearance. In games he is mobile and joyful. At first he is courteous and attentive to everybody, but afterward he is so only to those of whom he expects to obtain something. He tries to please them and even anticipates their different wishes. On every convenient occasion he fawns upon his teachers, and with an air of timidity shows his attachment to them. He never misses an opportunity to quote the most current rules of morality, which he knows by heart. During these talks to his teachers, he looks straight into their faces. Conversation of this kind takes place chiefly, when he is detected in an offence.

Quite often he has the air of such a good hearted boy, so frank and so naive that everybody takes an interest in him. In the class room he always tries to be modest and only by raising his hand does he indicate to his teacher his readiness to answer a question or solve a problem. His answers are not always correct; often they are nothing but the teacher's words, which he has succeeded in memorizing. Such a child studies well at first and in an exemplary manner performs all that is wanted of him, but this does not last long.

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*This article has been suggested by the investigation and classification of Dr. P. Lesshaft.

It soon appears that this charming child is disliked by his classmates; the fact surprises the teacher, who at first attributes it to the wickedness of the bad pupils. Little by little he estranges himself from his classmates but remains often the favorite of the teacher, who, seeing him oppressed and persecuted, tries the more to defend him. In this way the hypocritical child becomes more intimate with his teacher to whom he reports, as if accidentally, certain acts of his comrades, and the offences they have committed. At other times he relates the same to the teacher, openly.

He often makes use of the teacher to get rid of his lessons under different pretences. At one time he openly declares that he has no inclination to apply himself to study, affecting all by his frankness. At another time he says he is sick. In such cases, he expresses his sorrow to be obliged to miss his lessons. In general he has recourse to all kinds of sickness by means of which he hopes to move his hearers to pity and thereby get his wishes satisfied. A child of this type has often recourse to imaginary sufferings, such as a slight cough or bleeding by irritating his gums. At times he pretends to be feeble or even suffering from a nervous attack.

A case has been observed, where such a child, wishing to get rid of an approaching examination, declared, two months in advance to his instructor, that his eyesight was beginning to fail. He began to knock himself against different objects, and even people. This happened, chiefly, when many persons were around. At last he declared that his sight failed him utterly. He was taken for consultation and examination to medical men who diagnosed it as a case of possible blindness and attributed it to feebleness, anemia, etc. But the parents, who knew their child better by means of punishments made him to see again. It happens in school that pupils lose small things, which when a search is made are often found in the possession of a child of this type, who seems as though he had no notion of property. At the same time, he hides with great care all that belongs to him. He is stingy and greedy. He collects objects which are utterly useless to him. If he needs something he will rather get it stealthily than openly. All these qualities are soon found out by the teacher, who modifies his relations with the child. The teacher begins to look after him more objectively and see his faults.

When the child does not foresee any more use in adjusting himself to his environment, he begins to show himself as he really is. From now on, fear is the only means by which he is made to obey the demands of adults, and he does not obey when he knows that he will not be subjected to punishments. He gets off when possible with the most shameless lie; he tells an untruth without any necessity for it and with a most innocent and frank face. Being suspected and even detected in lying, he will never acknowledge it, particularly when he does not foresee any punishment.

He uses all means to defend himself, sometimes inventing fictitious stories for that purpose; if he sees there is nothing in his favor he takes to tears, and complains bitterly of unjust and partial treatment. Lying is the most characteristic trait of such a child. In all his actions he is guided by his own self interests; he never takes into consideration the wants and suffering of others, even of persons that are very near to him. After having caused pain or suffering to some one, he can go to sleep with perfect peace of mind, as if nothing had happened.

He is not attached to anybody or anything; and he easily changes his acquaintances and mode of life. Transferred to a new place and among new acquaintances, he avails himself again of his lost advantages, and appears a lovely child. If he finds the people in this new environment are kind and yielding, he will show himself remarkably self confident; he will assume an air of knowing every thing, and will even undertake to teach those who are his seniors. He will exploit all his acquaintances whenever possible. Soon he manages them without any ceremony and becomes their master and tyrant and distinguishes himself on such occasions by being exacting and cruel. He possesses neither modesty nor delicacy. As was said above, he only knows his personal interest and this is the only motive of his action.

If the school discipline remains without influence upon such child, he may be expelled for laziness or stupidity. Much later we meet him in society, where he presents himself under different forms. At one time he appears with the external air of a weak spirited, pitiful philanthropist, who plays the role of a father or benefactor. Sometimes we find him to be an impudent, self-confident person, for whom nothing holy exists; he only knows how to satisfy his personal wants and his animal instincts.

The question properly arises how could such a type develop in the family and reach such a form before he has entered school What have been the conditions that have created such a child What significance has the phenomena that we have seen, and what connection is there between them?

We have been able to study a number of such children before entering school, and from these observations deduce the following principal causes that contribute toward the making of such a type Habitual lying and hypocrisy of the parents, who are given up to a life which is essentially practical and full of trivial calculations; entire absence of care of the children, who are left to themselves, while their parents are absorbed by their narrow interests; the example of parents who receive guests with a show of affection and after their departure revile them; the total absence of conditions which should excite the attention of the child and should provoke him to think; the satisfaction of the child's desires when he seeks to obtain them by caressing and by begging; the participation of ach a child in all kinds of calculations and amusements of his lders, as playing cards, entertainments, etc.

It is by qualities of an exterior nature that children of this type ay be noticed, such as the love of dress, boastfulness, and by all ach qualities that go to prove that they do not reflect enough upon ne import of their actions or their speech. They fully confirm the ssertion that the more an individual lacks real qualities, the more e is disposed to exterior glitter. All acts of such children have ut one aim, to attract the attention of the public by their exterior. n order to raise themselves up in importance and in dignity they ride themselves upon their worldly connections, and upon the imginary merits of their friends.

It is needless to say that such a child is very deficient in moral ualities when he becomes a young man. He has no ideals. The lucation which he has received did not prepare him to comprehend e idea of truth or to acquire love for his equals. The feeling of spect for others and the sense of duty are utterly foreign to him, are other deep and sincere sentiments.

Punishment applied to the hypocritical child or any kind of rsecution makes him only depressed or completely apathetic. To pel him from school means to deprive him of the very thing he eds, of the thing which may still correct him, as only the school d good comrades may furnish the necessary conditions for his imvement.

THE AMBITIOUS TYPE.

The child of the ambitious type strikes us from the first mont of his entering school by his exterior, and by his expression the sense of dignity. He usually dresses himself neatly and anly.

He examines, slowly, all that is around him. He follows closely the acts of his teachers, taking into account their least explanan or even gesture. When the hypocritical child pushes himself rward, the ambitious one calmly lets him do it; our new type es to respond when no one in the class is prepared to do so. On casion he likes to show that he knows his business, that he quires everything with ease. He works with little show in the ss-room, but is very assiduous secretly in order to shine the more illiantly afterwards.

He aspires, above all, to appear beyond comparison with any her child, so he will flatly refuse to answer a question or solve a oblem, in which he is not prepared. He always wishes to disguish himself, and not to be taken for an ordinary mortal. At st, he turns to his comrades with all kinds of questions ; then he ows off his knowledge ; much later he assumes toward them a tronizing air, encourages them in their work and volunteers to lve for them the most difficult tasks. A failure affects him prooundly and for a time takes away his energy. Praise and distinc tion give him a great deal of satisfaction; he shines then with joy and looks at all around him with a triumphant air, and delights to contemplate the feebleness and ignorance of those that surround him. When he debates, he vigorously defends his opinion and does not give in readily to the opinions of his opponents, does not tolerate the least adverse criticism or the least blame; these really irritate him beyond measure.

Such a child is very revengeful, and is always glad to see the failure of his adversary. His principal aim is to distinguish himself, to be the first in the class, to be the first in everything, and govern his comrades, who at first like him well, but stand aside from him as soon as they get better acquainted with him. In girls' schools such a type is often worshipped. Such children always try to take the lead at games, and like to be chosen arbitrator or umpire. This role fits them but little, however, for they are unjust towards their opponents, and to all those who do not yield to their authority. They are on very bad terms with the hypocritical child, but as they have more firmness they soon get the upper hand.

Their ideal, however, is force, authority. In their capacity as good pupils, they enjoy all sorts of privileges and favors. In general, they are individuals of good executive power, and are endowed with a good memory. Little by little they concentrate their activity upon one thing, by means of which they hope to distinguish themselves, and march resolutely toward their aim without seeing anything else about them.

An individual of the ambitious type, may be a man of knowledge, is active and has the appearances of an able man, with a good deal of self possession; but he lacks originality and talent. What are the conditions that contribute to the development of such a type in the family? The ambitious type develops under two different conditions: first, he may be the result of emulation; second, he may be the result of constant praise of his merits or qualities. Of course, the ambitious type presents a shade of difference, according to the cause that contributed to his development. We sometimes meet in the same family children that completely belong to different types. By close observation we can explain this easily. We notice that one child is caressed and pampered by his mother, who always anticipates his desires, and is never able to satisfy them. Side by side with this child, we notice another with whom the mother is not at all occupied; she gives him only what is absolutely necessary. Again, a third child of the same mother sees nothing but bad qualities. She keeps him at a distance; sometimes she makes him serve as the amusement of her Benjamin, and treats him arbitrarily and unjustly. Under such conditions three types of children may develop that are absolutely distinct one from another. The first child may develop into an individual of the ambitious or the easily depressed type. The second child may develop into an individual of the ambitious type, if he is merely ignored and neglected without being persecuted, and at the same time, if the moral and physical qualities of the first are praised and admired. This second child will develop into the ambitious type in consequence of constant emulation.

The difference between these two children consists in the the following: The first child is more pliant and kind, but is more spoiled and less firm, whereas the second is more calculating and cold, and at the same time more firm and consistent. He follows eagerly and attentively the acts and progress of his brother, with whom he is in constant rivalry.

Change the conditions in which the child of the ambitious type is found; treat him like the other children; do not lavish any distinctions upon him; do not give him any prizes or presents and he immediately becomes lazy, slovenly and apathetic.

THE GOOD NATURED TYPE.

The child of the good natured type appears in school very quiet and calm, and observes with great attention everything that passes round him. He soon becomes familiar with his classmates, selectng those pupils whose appearance is less attractive or who are oor; he also prefers those who are not favored by his comrades or y the teacher.

At first he is very unattentive in the class to the words of his acher. It is necessary that he should habituate himself to the any new impressions that surround him. These act upon him ith great intensity. Little by little he begins to follow the explaation of his teacher. When the teacher asks the class to respond a question which does not demand a mere repetition of acquired hrases, but an application of a precept or a formula, the child of e good natured type will give a more complete and accurate answer an any other child. At times he whispers the answer in the ear his neighbor, who, if he is a hypocrite, will repeat the answer in a ud manner and the author will not protest.

He speaks without assurance, as if he had doubts. His memory little developed, but he is able to apply his acquired knowledge, ecause he has been habituated to reflect upon the facts which he as observed. He never responds immediately when a question is ddressed to him, and will only answer after having examined the question in detail. When an explanation is given to him of certain phenomena, he will rather deny this explanation than admit it, will try in every possible way to prove the feebleness of the explanation and will seek another one. In general he never accepts the opinions of others readily and likes much discussion; but he is moved to do so not out of the desire to contradict, but in order to see the question from all sides and in this way reach its true solution.

If he commits a fault he will confess it frankly and will never permit that one of his comrades should be punished for it; he is even capable of exaggerating his own faults. If he is accused unjustly, he will rather be silent, but will not disclose his comrades under any circumstances. If the question is put to him directly, he will say that he is not guilty, and if he knows the pupil who is guilty he will frankly declare that he will not name him. He is firm and steady on this point; this is why he is always liked by his comrades. When an innocent pupil is accused or a weak one persecuted, he ardently defends him, and thereby often incurs the anger and dissatisfaction of his teachers. He never agrees with lying or violence under any form whatever; if he perceives the least trace of them he will make the fact public when the interests of others are at stake; but if he alone is concerned, he will say not a word. He is a great enemy of hypocritical persons, but he never persecutes them systematically, being content with taking off their masks. He will never persecute his personal enemies, even if they cause him much pain and suffering, but will keep out of their way.

He is usually a generous and loving child; he is strongly attached to his mother and to all persons who are around him during his childhood. He is sincere, frank, and simple, with every one; he shows no exterior sign of tenderness to anyone; he never thinks of showing himself better than he is and will rather portray himself in an unfavorable light. He is not the least greedy, and he never wishes to make use of other people's property; he never seeks any privileges or personal gains, but on the contrary he is always ready to share his best to the extent of forgetting his own wants. All those that are around him, and especially those that are in want, may be sure to receive his aid to the full extent of his powers; he is without any hidden calculations; he is sensible to the impressions of feeling and is always moved at the sight of suffering and privation.

If he is alone he never idles, but always finds for himself some work or occupation. His sense of observation is remarkable; he gladly examines plants, animals and every other thing which is around him; all these observed phenomena serve him afterward as rich material for reflection. He likes to share his impressions with a person who is near him, and will always approach this person to clear up doubts or misunderstandings. He knows well what are the acts which will grieve or be disagreeable to this person, and tries to avoid them. If an act which he has committed is disapproved by this person and if the motives of the disapproval are clear to him, he is sorry immediately that he has acted badly. This is a striking characteristic of a child of the good natured type. By frankly avowing his fault he seeks to correct it; he never does so by acts of servility. Moreover, in himself and never in others does he seek the cause that led him to act badly. Such a child only requires that his faults and failings should be explained to him calmly and with reason. A reasonable and just demand excites his energies to the utmost.

When, on the contrary, we limit his liberty, when we weary him at every instant with rules and regulations, when we threaten and punish him, when we force him to learn, when without reasoning we enjoin him to obey, in a word, if we reduce him to a mere mechanism, he becomes a troublesome and even unbearable child; he may in certain extreme cases develop into a child of the depressed type. He does not submit himself then to any measure, and is not influenced by any punishments. Mobile, restless and observing, he notices the weak side of his oppressors and reproduces them in a caricatured form, resorting boldly and fearlessly to freaks and undertakings sometimes of the most extreme character. As to his studies, he abandons them completely. Irritated and being put beside himself by a series of measures directed against him, he is capable of insulting his oppressors by means of words and acts. ents, rewards and prizes have no effect upon him, and he attaches no importance to them; material advantages do not exist for him and he does not try to acquire them.

The Duties Of A Principal.

By **William H. Maxwell**, City Superintendent of Schools, New York.

[Note.—Owing to the accumulation of business connected with his official duties, Dr. Maxwell was reluctantly compelled to relinquish his intention of writing the article he had promised. However, in the following extracts from his reports published from time to time, will be found some of his views concerning the duties of a principal.]—Editor.

SUPERVISION OF CITY SCHOOLS.

(Report of 1892).

The principal of a school ought to be held to a strict responsibility within certain well-defined lines for the administration of the school or schools placed under his direction. He has duties to perform towards his pupils, and those in parental relation to them, toward subordinate teachers, and toward his immediate official superior, the Superintendent.

He should, in the first place, be an expert in school sanitation. It may not be well to place in the hands of a principal the power to expend money, to make repairs or alterations in the school building, but he should know when the condition of the building is not right and should make life a burden to those who have the power, until defects are remedied. He should have a keen eye to discover physical weaknesses in children, such as myopia or astigmatism, or nervous disorders, and should be skilled to take measures of prevention if not of cure. Equally keen should be his discernment of intellectual and moral defects, such as poor memory, lack of constructive ability, lying, dishonesty and the like; and in all such cases it is his duty to devise, if possible, a course of educational treatment to cure the disease. He should endeavor, with the aid of his teachers, to discover particular aptitudes and talents in his pupils, and should advise with pupils and parents as to the most fruitful course of educational work. I do not refer in this connection merely to the power vested in the principal of permitting and encouraging bright pupils to advance more rapidly than their duller companions. That the principal ought to possess and exercise this power will be conceded. I refer more particularly to the duty of advising as to whether, for instance, a child should stop going to school at the end of the grammar school course, as it is better for many children to do, or whether he should go on through the high school and then through college, or whether he should go to a lit-

ry high school, or to a manual training high school. It is, per-
ps, doubtful if a principal has a more important duty toward
iety than this.

Socialists and communists complain of the dreadful inequalities
the distribution of wealth. They point to the extremes of pov-
y and wealth, and denounce the conditions of society which gave
m birth or permit them to live. The discontent engendered
ds vent in all sorts of ridiculous and impossible schemes, from a
hibitory tariff to absolute free trade, from the nationalization of
d to an enforced equal division of wealth. But it may well be
ubted whether inequalities in the distribution of wealth may be
no small degree due to the wrong distribution of talent. There
e college professors who ought certainly to be making shoes or
uilding fences; there are shoemakers who have by nature all the
ental and moral qualities to fit them for college professorships.
here are principals of schools who ought to be selling ribbons;
ere are men selling ribbons who ought to be principals of schools.
here are men in the pulpit who ought to be driving reaping ma-
ines; there are men driving reaping machines who ought to be
the pulpit. What a change there would be, not merely in the
istribution of wealth, not merely in the increase of the product of
bor, but in the happiness, the morality, the general well-being of
ankind, if every man could be set to that kind of work which he
n do best! There is no man in the community who can do so
uch to insure the right distribution of talent as the schoolmaster,
he will but study his pupils and give honest advice to parents.
igh schools, colleges and professional schools of all kinds might
saved from the weary and impossible task of endeavoring to
ach the unfit or the incompetent, if principals and teachers would
ek earnestly to discover the special bents of their pupils' minds
d advise their education along appropriate lines.

Toward the teacher, the principal's duties are manifold. He
ould know the plan of work in every class. He should know ex-
tly what every teacher is teaching and how she is teaching it.
hese two things he may find out by inspection and examinations;
t stated examinations, but sporadic tests used as elements in
aching. The principal who has to wait until the end of the
onth or the end of a term to determine by a written examination
hether a given stint of work has been accomplished, is lazy and
efficient. The stated monthly examination by the principal is
sponsible for more machine teaching, more injurious cramming,
an all other causes combined. The only proper way for a princi-
l to find out how his teachers are teaching, is by the diligent
ercise of his eyes and his ears. He should inspect by listening to
citations and by examination of the pupils' written work in lan-
age and other subjects. I have known the language work of a
rge school to be revolutionized in a few weeks by the principal

requiring his teachers to send to his office the children's written exercises, after they had been corrected, but before they had been returned to the writers. The principal's inspection should be hourly, daily. In it, or in allied work, he should spend his entire time during school hours. When we consider that a principal is required to work only five hours a day, five days in the week, during about nine months in the year, it is not too much to ask that all such labor as preparation for school exercises, the keeping of records and the like, should be done out of the regular school hours.

"The ever present question which the principal should seek to determine," says Col. Parker, "should be: Are these pupils doing that work in the most economical manner, which is immediately needed by them for their growth and development?" This question the principal should seek to determine not only absolutely with regard to the work of each teacher in her class, but also relatively with regard to the teachers above her and the teachers below her. In the Brooklyn system of schools each pupil passes through fifteen grades in as many half years, and receives instruction from as many teachers. The child receives his knowledge of arithmetic, for example, at the hands of fifteen teachers. It goes without saying that in passing through this course, in changing from one teacher to another, much time is lost, much energy is wasted. It is one of the most important duties of the principal to reduce waste of energy to a minimum by taking care that the change is made with as little friction as possible and by unifying the work of all his teachers in each subject of the course. The principal should see to it that all the studies in any given grade are properly correlated, that the energy of the pupil is not diverted from the line of least resistance every time he changes teachers.

But, if economy of energy in attaining given results is the object which the principal should have in view, and if inspection and frequent oral examination are the means by which he is to determine what and how his teachers are teaching, what are the means by which he is to correct faults, to institute better methods, and to stimulate enthusiasm? The chief means are three:

Private criticism—pointing out to a teacher privately—never in the presence of others—what her shortcomings are and how they may be amended. The principal who reports against a teacher without having first made himself thoroughly familiar with the defects in her work, and, secondly, having given her abundant warning, criticism and assistance, fails utterly in his duty.

The second means by which a principal may improve the work of his teachers is by giving model lessons. As Colonel Parker well says: "A principal should be thoroughly capable of giving model lessons in every grade in his school and upon every subject taught."

The third means is the teachers' meeting. The teachers' meetings should be of two kinds: 1. The general meeting of all the teachers in the school; 2. Special meetings with teachers by grades.

1. The general meeting should be devoted partly to the discussion of general questions of discipline, promotion and the like, that concern all the teachers, and partly to the discussion of fundamental principles of education, and to the clothing of these principles with concrete illustrations. The best way to conduct such meetings I believe to be that by which John Stuart Mills, George Grote, and their associates, studied logic and political economy. "Our first subject," says Mr. Mills, "was political economy. We chose some systematic treatise as our text-book, my father's 'Elements' being our first choice. One of us read aloud a chapter, or some smaller portion of the book. The discussion was then opened, and anyone who had an objection or other remark to make made it. Our rule was to discuss thoroughly every point raised, whether great or small, prolonging the discussion until all who took part were satisfied with the conclusion they had individually arrived at, and to follow up every topic of collateral speculation the chapter or the conversation suggested, never leaving it until we had untied every knot we found. We repeatedly kept up the discussion of some point for several weeks, thinking intently upon it during the intervals of our meetings, and contriving solutions of the new difficulties which had arisen in the last morning's discussion." If the discussion of sound works on pedagogy and psychology were carried on in this manner under the direction of a thoughtful and energetic principal, each teacher would almost necessarily become a thinker and a discoverer of truth. Until a teacher has learned to think for herself, she will not be able to teach her pupils to think and to discover truths for themselves. If, on the other hand, the principal conducts these meetings by assigning lessons to be studied and recited, as by a class of pupils, he is probably doing nothing more than setting a conspicuous example of bad teaching and disgusting his teachers with the study of professional literature.

The grade meeting, on the other hand, should be for the consideration of plans of teaching. To make this work effective and of permanent value, or, if it be inefficient and valueless, to prove its worthlessness, there should be kept a grade book for each grade in which should be entered complete outlines of the work in each subject and suggestions as to methods. If this book be kept systematically, if the results of experiments are carefully noted down, if whatever is faulty in the method is so marked and a better plan substituted, the book becomes the most valuable "manual" of work for the teacher. The time has gone by when it was thought necessary to have teaching done in a uniform manner, in accordance with a manual issued from the superintendent's office. The grade manual should be prepared by the teacher of the grade under the supervision of the principal, should not be printed, and should be amended whenever new light is thrown either on the subject or on the method.

Other ways there are, no doubt, of improving teachers' work. Commissioner Harris has pointed out somewhere that the art of turning a poor teacher into a good teacher is a heaven-sent gift which some principals possess, but which it is often impossible to explain. But these three methods—private criticism, the giving of model lessons, and teachers' meetings, general meetings and grade meetings—are means that ought to be employed by all principals.

Toward the superintendent the principal has duties to perform as well as toward his subordinate teachers. They are at least four:

(1) To carry out faithfully and to the best of his ability all rules and orders. An army of teachers can no more be managed without rules and order than an army of soldiers.

(2) To try such experiments as the superintendent may suggest and to report faithfully the results. In this way the principal becomes the most efficient aid to the superintendent either in bringing into general use a good method or in preventing the spread of a bad method.

(3) To report to the superintendent every new idea or device he (the principal) has found to work well in his school, so that the superintendent may carry it to other schools.

(4) Lastly, and perhaps most important of all, at stated intervals the principal should report faithfully, honestly, and without fear or favor, on the efficiency of every teacher under his charge. When a teacher is too ignorant or too indifferent to do good work, when she is beyond the reach of supervision, it is the duty of the principal to say so firmly and manfully, and then if the superintendent finds the principal's statement correct, the inefficient teacher should be removed by the Board of Education.

In all this work belonging to the principal, there is great danger of training his teachers to be, or permitting them to become, mere machines. There is no more serious obstacle to progress than the principal who insists on teachers doing everything exactly in a way he prescribes; who will not permit a teacher to think for herself. Against this peril he must be constantly on his guard. When it becomes or threatens to become a real peril it is one of the first duties of the superintendent to step in and secure to the class teacher that reasonable liberty of thought and action without which no teaching can be effective, no system of schools can be progressive.

QUALIFICATIONS OF PRINCIPALS OF ELEMENTARY SCHOOLS.

(Report for 1898-99.)

There is no more important office in the school system than that of principal of an elementary school. The influence of a thoroughly capable principal in a large school is of inestimable alue. It permeates every class-room. It has its effect on every eacher and every pupil. Place a man of weak character in authory over a school, and discipline and instruction will alike suffer. et the principal be a man of violent temper, coarse and vulgar in anners, and these characteristics will be reflected in every classom.

But if the principal is a man of scholarship, and a student of ducation, if he is a lover of children and of child study, if he is at nce gentle and firm, wise and tactful, these qualities will pervade he entire school. Under his influence strong teachers will grow tronger, the weaker teachers will become strong, and in the wholeome atmosphere created by his presence the children will gain nowledge with pleasure, they will be orderly without repression, nd they will unconsciously form ideals and habits of forbearance nd firmness, of kindness and courage.

In a recent Report, Superintendent Soldan of St. Louis has ritten so wisely on this subject that I cannot forbear quoting the ollowing passage:

"In these days of marked and rapid advance in the philosophy f education, in child study and in practical methods, it is not nough for a principal to possess the routine efficiency and the sucessful experience derived from many years of practice in managing chools. In qualifications confined to routine ability there is not a ufficient element of progress. There is good teaching done elsehere, and the child has a right to demand that his leader, on hom his education depends, should be informed of the best work nd thought current in educational literature and practice. He hould be able when occasion arises to give good pedagogical easons for his practical methods and directions, more valid than 'I think so" or "this is the way in which I think it ought to be one." Constant professional growth is even more necessary for he principal than for the teacher, because it is proper that the fficer should keep in advance of his soldiers. The principal must eep in touch with the living, spiritual progress of the age, and, bove all other things, he should be a well informed student of eduational matters in theory and practice. Official authority supported y personal qualifications constitutes the most efficient kind of eadership, and will always find responsive following. The example f the principal counts for much in the practice of the teachers. Iis ways of dealing with children and parents will be more or less mitated in the rooms of his school. The daily acts of a wise, kind nd firm manager of children are a more powerful influence in trainng and guiding teachers than mere direction or command."

The theory is sometimes advanced that if there are only superntendents enough to inspect and examine schools and make ggestions or give orders to principals and teachers, it does not ake very much difference what kind of man the principal may be.

I have been much impressed with the falsity of this notion since visiting some of the schools of the former City of New York, now the boroughs of Manhattan and the Bronx. In proportion to the number of pupils and teachers, the old City of New York had a larger number of superintendents for its schools than any other large city in the world. Nor will it be denied that these superintendents are able, experienced and energetic men. If the theory is true that superintendents, through periodical inspections, can make good schools, then all the puplic schools in New York City ought to have become good schools. Yet nothing has struck me so forcibly in visiting these schools as the inequalty in their characteristics. Some schools I have found that are truly admirable in every respect. In all such cases the principals are all that principals ought to be. Other schools I have seen in which the order was of that cast-iron kind which represses every genial impulse of the soul and causes, when the pressure is removed, a rebound toward what is mischievous and vicious; in which many of the teachers are sunk in ruts thirty years deep and teach by purely mechanical methods, and in which the children learn by rote, without pleasure and without intelligence. The cause is not far to seek: the principal has some fatal weakness in character, or he either never was or has ceased to be a student of the world, of books and of children. The efforts of the visiting superintendents, through inspection of the teachers' work and examination of classes, had almost entirely failed to work any appreciable change in the character of the school. I do not say that superintendents' work in such cases is altogether without value; class teachers are sometimes reached, and inspired and encouraged to stand up against the prevailing drift of the school; but such cases are exceptional. My own experience in Brooklyn is entirely in accord with what I have observed in Manhattan: I was never able to secure any permanent and all-pervading improvement in a school except through a strong principal. Superintendents, particularly when they are not too numerous, may have a potent influence on a school system; but it is to the principal we must look to bring his school up to a high standard of efficiency.

Impressed with the idea, the Board of Examiners has spared no pains in conducting examinations for principals' licenses, to discover whether or not the applicants possess the necessary qualifications. A college degree is accepted as a guarantee ot scholarship. Applicants who are not college graduates must pass a severe examination in scholarship. All applicants must pass a searching examination, oral and written, in the science and history of education, in methods of teaching, and in school management, while their professional records are minutely inspected to find whether they possess those elements of character without which no amount of scholarship or professional knowledge will make a successful principal.

Class Management.

By JEROME A. O'CONNELL, Board of Examiners, New York.

IN the preceding pages of this MONOGRAPH have been set forth views upon the various elements of class-management. To unify those views, to emphasize certain points, and to systemtize, to condense and to supplement briefly the opinions expressed re the objects of this article.

"Education," says Prof. James, "cannot be better described han by calling it the organization of acquired habits of reaction nd tendencies to behavior." To secure for the child the powers of cquired habits of reaction and tendencies to behavior, it is necesary to produce a proper growth, morally, physically, and mentally. Vhile the school seeks to fill the mind with knowledge, its great im should be to teach the pupil to react properly, to form right abits of thinking and doing, to train his natural inclinations so hat their reactive energies may become the most potential elements f his living. Discipline is of more worth than knowledge.

Theoretically, you may separate the consideration of discipline nd the consideration of the increase of knowledge; practically uch separation is not essential or desirable; for, instruction withut discipline is not possible, and the highest form of discipline esults from the best instruction.

1. Discipline is dependent on the personality of the teacher. Example is better than precept. The saying, "Don't do as I do, do s I say," should have no place in teaching. The more nearly perect a teacher is, the better his pupils will be. Children imitate: if he teacher is a model in scholarship, in speech, in dress, in nanners, is mentally active and physically vigorous, and is watchul, prudent, consistent, just and sympathetic, the pupils will need ut little assistance to achieve success; if, on the other hand, the eacher lacks scholarship, is guilty of inelegancies of speech, ntidiness of dress, discourtesies, weaknesses of character, the effect n the pupils will be plainly shown, and carelessness, disobedience, umult will result.

That proficiency in scholarship is essential needs no emphasis. Every teacher should have a broad culture. It is generally held hat a high school education is sufficient scholastic training for a eacher in the elementary schools, but it is the opinion of many that college education, or its equivalent, is not too much to expect of ne whose duties are so important; that in education the teacher should be at least eight years ahead of his scholars. He should endeavor also to become master of at least one subject. In the last ten years past graduate courses—law, medicine, art, psychology. etc.—have done much to make our teachers more cultured, and therefore more efficient. He that stops studying should stop teaching.

The most disagreeable sight in a class-room is a slovenly teacher. The dress need not be costly, but it must be neat; not necessarily new, but necessarily clean. Every part of the room reflects the teacher. The desks, the floors and the walls should bear evidence of constant care. It is the right and duty of the teacher to demand that the room shall be kept in decent condition. Uncleaniness and untidiness are the root of many of the evils of the class-room, and are more reflected in the pupils than any other failings of the teacher.

The speech of the teacher should be clearly enunciated, well expressed, and limited. Clear enunciation comes from practise, good expression from the study of good examples, and limitation in speech from the wisdom of avoiding lecturing. In a cosmopolitan city such as ours, the value of clear enunciation by the teacher is incalculable. For many, the class-room is the only place where training in proper language and clear expression is possible. Clear language impresses clear ideas and accurate expressions are possible only when accurate impressions have been made. Little progress, however, is made where the teacher talks much. When the burden of the recitations and explanations is on the pupils, the teacher is enabled to discover their deficiencies while the pupils become interested in their work, proficient in reasoning and skilled in composition. Make the pupils talk, make them talk properly; make them talk accurately.

The manners of a teacher should be easy, courteous and dignified. Every teacher must avoid actions that will provoke disrespect, as lounging, undue familiarity, frivolity, coarseness of any kind. Every pupil, too, is entitled to the respect of the teacher. The rich or refined should receive it not less than the poor or uncultured. Discourtesy is inexcusable in any superior. A teacher that feels a decent respect for the personality of each child may become a powerful instrument in uplifting the unfortunate. Only those who have studied the environments of the children in a great city like New York, can appreciate how great is the duty of teachers towards those who, except in school, see more of depravity and coarseness than decency and culture. The children will be better when their opportunities are better. Merit will win its way. The teacher that believes "the best part of the community is the least" is too far removed from his pupils.

The teacher must watch himself and watch his pupils. He must watch himself that he shall lack nothing that he ought to possess in morals, health or knowledge. He must watch his pupils that each one may feel the necessity of doing his duty, that each one's mental deficiencies may be properly treated, that each pupil may be advised as to his physical needs and that his morals shall not deteriorate. The teacher is to be watchful not only of the pupils' movements, actions and speech, of their external behavior or bearing, but of their inner life as well. In this a teacher will succeed only after he has closely studied his pupils and when he thoroughly knows their personalities The teacher's watchfulness over pupils, should be unvarying but generous; over himself, continuous and severe. Such watchfulness leads to good habits, which, in turn, make good lives. In a teacher it is a high art, one of the strong factors in class discipline.

Prudence is the ability to do the right thing at the right time, and is perhaps the most important of the many necessary virtues of a teacher. Without it, failure is certain. He that does not possess it naturally, will find it very difficult to acquire. Years of observation and imitation of tactful persons, together with intercourse with the world, and the study of the motives of men will produce a reasonable efficiency. The prudent teacher is never at a loss how to act. If the question be one of instruction, he knows, with the varying circumstances, just what to lay before the pupils, just how to arrange and how to present it. If the question be one of discipline, he knows when to speak and when to be silent; when to act and when to refrain from acting. From books on pedagogy he may learn what things are to be done and how they may be done, but the knack of knowing what to do or to say at a particular moment comes from a broader study than that of a few text-books. The work of a teacher liberalized by contact with the business or the literary world is easily distinguished from that of a teacher sunk for years in a rut.

Consistency requires that no orders are to be given or plans proposed which will be countermanded, neglected, or forgotten. Let the pupils learn at once that the teacher is unyielding, even to the point of his personal discomfort. The first effort made by children to test a teacher is usually to try the teacher's firmness. If the result shows indecision and weakness on the teacher's part, the effect on the class will be bad. Now, in order to avoid yielding, the teacher must be extremely careful not to issue any order which will require countermanding or forgetting. He must be entirely self-possessed that he may not speak unwisely, his voice being always under control. He must be far-seeing, that his words may require only what in justice should be done. Though there are few powers more valuable and few more easily acquired than self-possession and foresight, they are usually wanting in a young teacher. They grow slowly with experience; but they may be forced rapidly with a little effort. In all his work, it is well for the teacher to keep in view the caution: Be sure you're right, then go ahead. Improvement will result to him and to his pupils. The teacher will become more careful and just; the scholars more systematic and obedient; and confidence will take the place of distrust.

No teacher can succeed without sympathy for his pupils. By sympathy is meant a generous feeling for the welfare of the pupils; not an effeminate affection, but a whole-souled desire to see the pupil make progress in all lines. A full heart is needed as well as a full head. By getting down to the level of the children, the teacher may elevate them. By participating in their games, investigations, excursions and sports, he gains their confidence and esteem. They feel that he is not another being, but that he is one with a nature like theirs. When they strive to surmount difficulties, they will not fear to ask the way. The teacher, then, will obtain an intimate knowledge of the pupil; he will know his moral faults as well as his physical and mental needs. A cheerful countenance and a pleasant manner will sometimes disconcert, or quiet the most stubborn and rebellious pupil. A happy class is a progressive class.

2. Discipline is dependent upon the pupils. Education prepares for civilization. All that enter school must in some degree subordinate their individual inclinations and desires for the good of all. Let liberty exist; but let no pupil interfere with the rights of others. To properly guide the pupils becomes the work of the teacher. The child having no insight into the laws of nature and society must yield to the mature judgment of the teacher. Here is an opportunity for the teacher to show his skill. He must *lead* his pupils to do their duty. He may find the pupils utterly lacking in the spirit of subordination to authority. He must learn the causes of their failure to conform to the requirements of school life and by judicious use of his authority and skillful application of his knowledge of child nature, he must seek to substitute the proper spirit. Obedience, silence, attention, diligence, neatness, good manners, honor and other virtues will result.

Obedience is of first importance in the school-room. It may be freely given, or it may be forced. Naturally, the higher form is that freely given. The pupil that obeys because he must obey is more likely to become a trouble than he who obeys because he wills to do it. Kindness, patience, justice and firmness will reform nearly all disobedient children; the others seem to reform only under force and through fear. But even those who seem to obey under pressure alone will gradually yield under careful, scientific guidance. The few orders that are given should be given in brief, clear language, with firmness and without threats; an order that is not entirely understood is confusing, one that needs explanation, apology, or prop, tends to undermine authority. Disobedience may result from the parent's neglect to habituate the children to submit their wills to a higher authority, from the bad examples given by parents that disregard or defy the laws, from the temperament or the physical condition of the child, from dislike to the teacher, from the inability of the pupil to understand the work to be done, or from the failure of the teacher to act with justice, intelligence and firmness. But whatever the causes, let this be kept in mind—the pupils *must* obey.

Secure obedience first; then silence. Having secured obedience, the teacher will easily secure silence. The silence desired is not absolute stillness, but the silence that is produced by the spirit of coöperation between pupils and teacher. Movement about the room should be light and the voices, low. Calmness and attention to work should prevail.

The securing of attention is very often the most troublesome part of the teacher's work. Interest in the subject matter is the most potent factor for securing attention. But it is not the only factor; the personality of the teacher, the mental and physical state of the pupil, the methods of instruction, the hygienic conditions of the surrounding are elements which properly co-ordinated with it will secure the best attention, and necessarily the best work.

Industry or habitual diligence necessitates regularity, punctuality, accuracy, neatness. Without industry, success is not possible. The pupil that does extraordinary work by spurts may be a genius, but he may not become a success. The steady plodder is the one that will succeed. How to make a pupil a steady worker is the problem to be solved in each case. No hasty judgment will suffice. The teacher must discover what incentives will move the pupil, and for this purpose the most careful study of each pupil is necessary. The lower the incentives which move the child, the more delicate the work of the teacher, and the more necessary it is for him to strive to raise the child's standard.

Most children do their work because they must, many because they hope for a reward, some because they like to do it, and a few because they ought to do it. When work is done through fear, or compulsion, the performance of it is tedious and irksome, unless, perhaps, the advice of Prof. James' has been followed, to do at least once a day some disagreeable task, and thus to store up a reserve force for overcoming difficulties. Rewards of any kind—prizes, privileges, exemptions, good standing or approbation—are incentives which yield immediate results. Good habits are formed by these incentives more quickly than by any other means. Not only children, but men work for reward. It is the greatest force of progress. But while rewards promote improvement, the power acquired through love of a subject is more lasting and more beneficial. Pupils will dislike knowledge that they have acquired because of fear; they will forget easily what they have learned because of reward; they will retain and increase the knowledge assimilated because of love. But right and duty, including the sense of efficiency, self-control, honor, are the highest incentives to which a teacher may appeal. Moral training and firmness of will are at the basis of these. When practicable, they supersede all other incentives. There is no higher duty for the teacher than to promote the growth of the sense of right. Fear, reward, love of subject, the sense of right—these are means to secure obedience, silence, diligence, honor.

3. Discipline is dependent on the methods of instruction. The good teacher must know how to prepare his pupils' minds for the lesson, how to present the lesson, how to fix it in the mind; he must know the value of the use of the blackboard, of objective illustration, of correlation and concentration; he must arouse the self-activities of the child, that no impression shall be made without its appropriate expression; he must "so use the subjects of the curriculum as to develop the inherent powers of each individual;" he must know the science of programme-making and the importance of drill.

Apperception is a vital principle of teaching. It is not a new discovery. Writers and speakers that use similes, metaphors, parables, allegories, and the like, know the value of apperception. Good teachers in all times have used it. When we perceive a thing for the first time, if, from our previous experience, we can recall something like it, we know it; we unite it to our past perceptions. "With the assistance of the latter the sensation is held in consciousness, elevated into greater clearness, properly related to the remaining fields of thought, and so truly assimilated" (Lange's Apperception). To unite the new with the old, it is necessary to know what the old is. The teacher must have a knowledge of the contents of each child's mind. To obtain this knowledge, he must know the child's environments and his past training and studies. For this purpose a wise teacher employs skillful questioning. Having found in each instance what the pupil knows, and having revived this knowledge, the teacher may begin the presentation of the new.

All things can be made interesting if properly presented. The teacher is not limited to speech. In his presentation he should use objective illustration—splints in arithmetic, documents in history, specimens in nature study, maps, pictures, modeling in geography, illustrations on the blackboard, etc. In connection with the presentation of the lesson, concentration of interest should not be neglected. "The term 'correlation of studies' is often employed as though it were synonymous with Herbert's term 'concentration of interest.' Many of the early disciples who accepted this theory made Robinson Crusoe the centre of the course. They used the story for a reading exercise, and connected it with the lessons in writing, geography, arithmetic, etc. 'It has been pointed out by critics of this method that there is lways danger of covering up the literary features of the reading-atter under accessories of mathematics and natural science. If he material for other branches is to be sought for in connection ith the literary exercise, it will distract the attention from the oetic unity. On the other hand, arithmetic and geography can not e unfolded freely and comprehensively if they are to wait on the pportunities afforded in a poem or novel for their development. correlation of this kind, instead of being a deeper correlation—uch as is found in all parts of human learning by the studies of the ollege and the university—is rather a shallow and uninteresting ind of correlation that reminds one of the system of mnemonics hich neglects the associations of facts and events with their causes nd the history of their evolution, and looks for unessential quips, uns, or accidental suggestions with a view to strengthening the emory.' † * * * I found a saner concentration of interest. he various subjects of study were not separated by water-tight ompartments; each was brought as far as possible into relation ith all the rest. The flour, the suet, the currants, and the plums ere not presented separately, but mixed into an appetizing pud-ing. * * * The subject was Scotland. The children were not ept during one lesson to the geography and during another to istory, but both were taken together The reading was a Waverley ovel, the writing a biography of a famous Scot, the drawing a icture of Holyrood, and the map a contour of the country." ‡

The perfection of the lesson lies in the application. Said a oung man to me a short time ago, stretching his limbs and yawn-ng: "I am nearly dead from the want of exercise." Minds, as ell as bodies may become dead for the want of exercise. "No im-ression without expression." The character of the expression nables the teacher to determine the clearness of the impression. rain the pupil to express himself in speech and in composition, in rawing and in modeling. The pupils will become skilled in execu-ion, sound in judgment, and broad in culture.

4. And lastly, discipline is dependent on the conditions of the hild's school surroundings and on a variety of mechanical details. he temperature of the room should be normal, the air pure, and raughts absent; the seats and desks should be suitably adjusted, he light should enter over the left shoulder, the color of walls hould be restful to the eyes,—but these and similar details have, n recently erected school buildings, passed beyond the teacher's ontrol. Other mechanical details such as the carrying out of the rogram, the reception and the dismission of the pupils, the dis-ribution and collection of material for lesson-work, are means by hich habits of alertness, of promptness, and of attention to detail hould be cultivated. Machine-like drill, at certain times, aids a eacher much in securing discipline and benefits the pupils greatly.

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† Committee of Fifteen Report. ‡ David Salmon.

Editorial Notes.

Lateness:—Some pupils come late to school because they are not habituated to lead orderly lives: to go to bed betimes, to rise early, to dress quickly, to eat breakfast promptly. They lack the sense of doing the right things, in an orderly manner expeditiously. They are deficient in the sense of duty. They do not think it worth while to make an effort, regard it as a mere trifle not to be punctual, and are really surprised when they are punished for coming late.

Sometimes it is the fault of the parents who employ the children in running errands, unmindful of the fact that their offspring are acquiring the habit of unpunctuality. Lastly, lateness may be occasioned by a want of interest in instruction due either to the personality of the teacher or to his method of instruction or to the pupils' arrested mental development.

An accidental case of lateness may be overlooked; but if lateness begins to grow into a habit, the principal should send for the parents and make an appeal for their co-operation. If the pupil still persists in coming late, he should be treated as a case of chronic disobedience and all available means should then be used to compel him to obey the laws of the school.

Truancy:—The greatest number of cases of truancy may be traced to one cause: to the neglect of the children at home either as a result of extreme poverty and ignorance or as a consequence of the parents' exclusive attention to business and social duties. We have before us the picture of a boy who lived in a crowded tenement district. In order to reach his place of work in the suburbs, the father left the house every Monday morning before daybreak, remained away the entire week and only returned home late Saturday night. The boy's mother set out every morning early to do scrubbing and washing. He used to rise later, get his breakfast, lock up the house and start for school. Whenever a fire broke out in the neighborhood, or a parade was expected, he turned his steps from school to see it. Of course, it was very difficult to establish communication with a home like this.

The families of the well-to-do also contribute a goodly share of truants; especially where the father is absorbed in making money and then planning how to keep it and the mother is busied with the demands of society. Where the evenings of the parents are devoted to pleasures outside the home, the children are left without any supervision. Not seldom the scions of these parents are found at a matinee when they should be in school.

New York Teachers' Monographs.

NEW YORK METHODS.

JUNE, 1900.

Introduction.

By ALFRED T. SCHAUFFLER, Associate Superintendent of Schools, New York City.

A WORD of explanation with regard to the contents of this number of the Monographs seems to be advisable. The exhibit from the schools of New York City, which has gone to Paris, was limited by the conditions imposed upon us by the authorities in charge of the educational portion of the exhibit. Far less space is accorded to the City of Greater New York than was occupied at Chicago in 1893 by the old New York City, now the Boroughs of Manhattan and The Bronx.

The entire exhibit from the whole city will occupy a space which would extend about twenty feet along the side of a room, not over eight feet in height, and extend out from the wall not more than twenty-four inches. In this space are to be shown all our exhibits, from the kindergarten through the high school. It is evident that comparatively little of the original work of the pupils could be shown. We have been obliged, therefore, to use photographs to a very large extent—not only photographs of buildings, class rooms, classes, individuals and apparatus, but also photographs of the work of the pupils.

In order to illustrate clearly and in detail the course of study laid down for our schools, two classes of each grade were selected, almost at random, to exemplify the work done in each of several subjects. These classes sent in specimens of work done during the term, so that the actual work of the pupils could be shown in each subject, from the point in the course of study at which it is taken up, to the time when it is completed.

Each teacher whose class was selected to take part in the exhibit was requested to submit a brief statement as to what is required in the grade by the course of study, what methods are pursued in endeavoring to cover this ground, and what results are expected and attained. These statements are typewritten and are bound into the volumes sent to Paris, each teacher's statement preceding the work of her class.

The Committee in charge of the exhibit has been very much pleased with the results attained and with the high grade of excellence of the work submitted, and they believe that the teachers of the city will be glad to have an opportunity to see what others are doing along the lines which are of interest to them. It must be remembered, in reading these statements, that the writers were limited to a certain number of words, and that it was found exceedingly difficult to put all that they wanted to say into the condensed form necessitated by the exigencies of the case.

It was the intention, when this plan was adopted, to have at least twice as many statements submitted as could be used and to select the best for exhibition. More than two hundred such statements were submitted, and in almost every grade of every subject all the statements submitted have been accepted and used.

In this issue of the Monographs, only a part of the statements for each grade are printed, and it is very gratifying to be able to state that those not selected for publication here are quite as worthy of preservation as these.

Composition.

INTRODUCTION.

AM H. MAXWELL, City Superintendent of Public Schools, New York City.

AVE been at some pains to discover a way by which children's
fforts to master written expression in the mother tongue might
e facilitated while the burdens of teachers in correcting com-
ion might be diminished. The results of my investigations
h have been published in another place, are given below :

Professor George R. Carpenter put it none too strongly, com-
ing of the unhappy lot of the college instructor in rhetoric,
he said that he "has too frequently narrowed his interests
perhaps even debauched his intellect by confining himself for
to the incessant reading of themes merely made to order
red, lazy, or indifferent students." If this be the effect of
e-correcting on a man who deals with essays written by young
and young women from eighteen to twenty years of age, who
completed the grammar school and the high school courses,
who have passed an examination in English in order to enter
ge, how dreadful must be the drudgery of the teachers who
ct the compositions of mischievous boys and careless girls
e to fourteen years of age in the grammar schools! The
t of the grammar school teacher is worse than that of the col-
instructor in so far as her pupils' minds are less mature, their
ledge less extensive, and their powers of language less devel-
. Add to this that composition is only one of seven or eight
cts which the grammar-school teacher is required to teach, and
man may form a slight, but inadequate, idea of the difficulty
drudgery of that teacher's work.

Such being the case, it is surprising that so little attention has
paid by writers on methods of teaching to the matter of theme-
cting. On all hands it is admitted that a child should learn to
k and write his mother tongue clearly and accurately. It is
admitted that the correction of errors is essential to the secur-
f this result. Yet to the development of a systematic method
should interest the pupil in the work and economize the time
energy of the teacher, but slight attention has been paid. As
e, the manuals of elementary composition do little more than
ly lists of symbols—modifications in greater or less degree of

the proof-reader's marks—by which the teacher is asked to indicate in the margin the mistakes she finds in the body of the composition. When one seeks for information in the books on methods of teaching most frequently resorted to by the teacher, the dearth of discussion and suggestion is even more remarkable. Mr. Fitch, in his "Lectures on Teaching," has not a word to say on the subject. Dr. E. E. White, in his "Elements of Pedagogy," is equally silent. So is Johonnot in his "Principles and Practice of Teaching," and Page in his "Theory and Practice of Teaching." Superintendent Greenwood, in his "Principles of Education Practically Applied," says: "It is not intended to go into any elaborate accounts of methods of correcting compositions * * * . Minute directions for marking all errors are given in most treatises on compositions, so that I have but few suggestions to offer." He then proceeds to lay down some general directions, as that "the pupil should write a bold, legible hand," among which is one of really great value: "In all cases of doubt the pupil, if somewhat advanced, should consult the dictionary and English grammar." I regard this suggestion, natural and commonplace as it may appear, as of really great value, because I have found it in no other book on methods written in English, and because after some years' experience in dealing with some thousands of teachers, I have not discovered one who adopted it systematically until she received the suggestion from outside.

Mr. Prince, in his "Courses of Studies and Methods of Teaching," treats the subject somewhat more fully. He first gives the method that has been most usual in schools of this country. "It is well," he says, "to have each pupil, below the first year, provided with a language exercise book * * *. Upon the left-hand page the language exercises can be written; and upon the right-hand page the same exercise, after it is corrected, can be re-written in a correct form." To lighten the work of the teacher, he suggests that "some corrections may be made at the time of writing, the teacher passing among the pupils and pointing out their errors; but," he adds significantly, "most of the errors will have to be corrected after the papers are collected."

The method laid down by Mr. Prince is, as has been stated, the most usual method. It embraces three steps; the writing on a theme by the pupils; the marking, by the teacher, of errors in what the pupils have written; the re-writing, by the pupils, of their compositions in such a way as to correct the errors marked by the teacher.

In practice, I have found this method open to the most serious objections. The reading of compositions in order to correct errors lays an intolerable burden on the already overburdened grade teacher. In this monotonous "grind" she consumes the energy that should be devoted to the preparation and execution of class work. The drudgery for the teacher being so irksome and blighting, she is naturally led to diminish the number of compositions written: so that the pupil does not receive sufficient practice in writing; one composition a week is probably the maximum under this plan, while one every fortnight is more nearly the rule. At this rate, only those endowed with unusual powers of language ever learn to write with facility. But when the work of the teacher degenerates into mere drudgery, it is apt to become the same for the pupils. So it certainly is in this case. As the children have no facility in composition, the first writing is drudgery; as they are required to copy, after a lapse of some time, what has been corrected by the teacher, the copying process becomes more irksome even than the first writing; it is always perfunctory and generally abhorred. Since this has been the method commonly pursued in the higher grammar grades and in high schools, it is little wonder that the colleges find their students at entrance miserably deficient in the writing of English.

To escape this drudgery, teachers have suggested various modifications of this plan. One of these modifications, which may be taken as a sample of the others, is thus described by Mr. Prince: "Let as many pupils write their exercises upon the blackboard as can be accommodated there and call the attention of the entire class to the corrections you make in each, frequently appealing to the class for assistance. When some of the corrections have been made ask the pupils to re examine their papers and mark the errors they see, then after exchanging papers they may correct the mistakes of one another. After all this is done, the teacher, by glancing over the papers, can tell whether they may be copied into the language books as they are, or whether another recitation will be necessary to correct the papers."

While this method is a great improvement over the first described, it is defective in unnecessarily disclosing a child's errors to his classmates and thus exposing him to humiliation, in not exciting interest, in not exercising sufficiently the child's critical powers on his own work, and in not making use of the child's knowledge of grammar and related subjects. Moreover, it still calls for considerable burning of the midnight oil on the part of teachers, because the glancing over the papers, which Mr. Prince recommends, generally means many hours of tedious reading and perfunctory use of a blue pencil and red ink.

Before venturing to suggest what seems to be a better way, it may be well to set down some rules which the experience of the best teachers has developed regarding theme-writing.

(1) Anything we desire to learn—particularly when it is something we have to do—is best learned by practice on successive days. Hence it follows that in the grammar school, at least during the last two years, there should be a period, however short, devoted to composition writing on each school day.

(2) "No man or boy," as Professor Carpenter puts it, "can be made to write really well unless he writes for the purpose of expressing thought." Hence, the matter of the composition should always be selected from the class work in which the pupil is engaged—his history, his geography, his reading, his mathematics, his personal observation and experience.

(3) The composition period should be devoted exclusively to the composition work. President Eliot has pointed out that this work is needlessly complicated by trying to teach the art of thinking and the art of expression in the same lesson. The thinking part should receive attention in the lesson on the subject-matter; the expression of the pupil's thoughts should form the staple of the composition lesson.

(4) The doctrine of the co-ordination of studies admonishes us not only to take the subject-matter from one of the other studies, but to allow the pupils to make use of their grammars and dictionaries whenever they so desire. If, in writing, the child is at a loss for a fact, let him have free access to the book where it is to be found; if he is in doubt about a point in grammar, let him examine the text-book; if he does not know how to spell a word, let him look it up in a dictionary, and so on. The report of the Conference on English to the Committee of Ten says very wisely: "The teaching of formal grammar should be, as far as possible, incidental, and should be brought into close connection with the pupil's work in reading and composition."

As the acquisition of a clear and correct style of writing i largely a matter of imitation, the pupil should be taught in hi reading lessons to examine the style of what he reads, and even t select and study models for imitation.

(5) During the years of school life which must precede th writing of themes, the child should be very thoroughly drilled i the formation of typical sentence forms. The report of the Conference on English, alluded to above, puts this matter very strongly "The teacher should bear in mind that the necessity of correctnes in the formation of sentences and paragraphs is like the necessit of accurate addition, subtraction, multiplication and division i mathematical work, and that composition proper—the grouping o sentences and paragraphs—as well as development of a central idea should never be taught until this basis of correct sentences i attained."

(6) But even when the utmost care has been given to these preparatory exercises, children will make many blunders in the composition work. For the correction of errors, I have tried the following plan with most gratifying results: The pupils of a giv class are asked to write what they can on a topic selected from t class work of the preceding day. They are allowed from ten t fifteen minutes in which to write. After a few weeks of dai

that have been slowly and painfully copied after being interlined by the teacher. To the uninitiated they would not appear so fine, if shown at a World's Fair educational exhibition; but to the experienced eye they tell of honest and intelligent effort on the part of the child, and of burdens lifted from the shoulders of the teacher.

Composition.

FIRST YEAR—SECOND HALF.

The formal requirements of the Course of Study are: Copying words and sentences; special attention to the correct use of language.

The aim of the work is (*a*) to train pupils in the ready use of good English; and (*b*) to help them acquire readiness in expressing their thoughts.

The work of this grade is largely conversational upon tales and stories told or read to pupils; on their individual experiences; on their observation of animals, plants, and other objects found in nature; upon pictures; upon their observation of the weather.

The method of presentation is the following: When the child looks at an object or picture, that element which makes the strongest impression is apt to call forth oral expression. After a few days, the teacher's questions direct attention to the essential features, and lead to an appreciation of the motive underlying the art of composition. Only such objects and pictures are presented as fit into the child's world. By taking note of the clearest statements and having the authors repeat them in a certain order, the teacher develops an oral composition of considerable excellence. Expression of the child's knowledge forms an important feature of the exercise. The best of their statements or "stories" are written on the board and copied by the class. These are read by the pupils who are deficient in language. Here the power of imitation is brought into play. A pupil soon learns to recognize the best speakers, and their language in turn improves when they see their sentences written upon the blackboard and held up as models for their companions.

Correction of errors in capitalization, spelling, and modes of expression, are made by the teacher in the class. In this way she gets the children to recognize the beginning and end of a sentence, which is the foundation of formal language work. The end in view is to establish the limitations of the sentence as the expression of a well-rounded thought.

Jeannette Hecht, Class Teacher, P. S. No. 89.

FIRST YEAR—SECOND HALF.

The language work in 1B is a continuation of the work in 1A, conversations upon pictures being added. The pictures should e on subjects that the child understands and can talk about eely.

The work in conversation should be drawn from what the child as seen, read about, or from the nature work he has studied. For ample, should the nature lesson be on a flower, the children are ked to tell about that characteristic which most interests them. om their sentences, say twelve or fourteen, I take the three or ur best expressed, and write them on the blackboard. Sometimes raw a picture illustrating the subject, and let the children copy e sentences and the picture.

In this work less attention is given to writing than during the gular writing lesson. It is very difficult for little children to copy sentence which appeals to their imagination and at the same time ink about the formation of letters. The fact that the child makes effort to do his best is the principal thing.

While a child is giving a sentence, I do not correct grammatical rors. We want to get his thought, and to encourage him to talk. he is frequently interrupted for correction, he becomes shy and rgets what he was going to say. When he has finished, I ask me other boy to tell the same story in another way, then a third, d thus gradually correct the mistakes. In calling on boys, I lect those that speak most correctly so as to let the children have e benefit of the best models. In this grade one cannot always ve the reasons for the corrections, but where it is possible I do so, it makes a more lasting impression on the child's mind.

In the beginning, the reading is from the blackboard. I velop the sentences from the children. To do this, I select the w words for my reading lesson, and lead the children to use them. this way I get the required sentences. Blackboard work makes e lesson more interesting.

When the reader is used, I find it always a help to talk about e lesson first so as to arouse the interest of the child. It helps e child to read more naturally. This is one of the most difficult ks in teaching little children to read. No child can read well less he grasps the thought expressed in the printed matter. It of course necessary that the child should recognize all the words fore the lesson begins.

Elizabeth H. Ellis, Class Teacher, P. S. No. 58.

SECOND YEAR—FIRST HALF.

During the second year, the work in language is carried on in nnection with the study of different forms of water, air and sunht, common and domestic animals and birds, and the reproducn of short stories and fables.

The children are asked to relate the events of a day in the hool-room, their observations on the way to school, to express houghts that may be aroused by looking at a series of pictures, etc.

A subject calculated to sustain and increase the interest of the pupil is chosen for a lesson and presented in the conversational form. Topics of local importance are introduced, so that the children may be led to observe and think about common occurrences.

Again when the work is based upon an object that can be seen and examined, children are asked to talk about it, care being taken that their statements are given in the form of complete sentences. The teacher suggests such words as may be needed to make the subject clear, and to assist in correct verbal expression.

After every child has given a simple, correct, oral expression, the children are required to write what they have said.

The difficult and comparatively new words are placed on the board, but the words which are included in their own vocabularies must be written without assistance.

Many errors are anticipated by the methods employed above, so that comparatively few mistakes are made in the written work. Incorrect spelling and the faulty construction of sentences are never allowed to remain uncorrected, though the child is not always asked to re-write his sentence or paragraph. When it is within the capacity of the children illustrations are encouraged.

Estelle S. Cohen, Class Teacher, P. S. No. 103.

SECOND YEAR—FIRST HALF.

In this grade I continue the work in conversation of the preceding year,—conversation on the pupils' observation of the forms of water, air and sunlight are added.

In these conversations I ask the pupil to look not at the object itself, but at the picture existing in his imagination. He is familiar with the Hudson, with the ponds and lakes of Central Park and with the effects of the different winds. By asking one child to tell what he knows about the Hudson and allowing him to talk as long as he keeps to the subject before calling on another pupil, I develop sequence of events and thus establish connected thought.

The child in this grade is expected to tell a complete story; one appealing to the imagination is the best. While telling his story the child is encouraged to select those thoughts which carry the narrative forward. Facts of importance that have been omitted are supplied by other pupils.

A few of the leading facts are selected and written on the blackboard. Several pupils are called upon to read these sentences. When a pupil is ready to read, I allow him to do so, thus insuring a correct expression of the subject matter in pleasant tones. The children then copy the sentences from the blackboard. Simple drawings by the pupils add interest to the work.

In the course of a recitation something of importance may come up which I desire to impress upon the minds of the children. I reduce these facts to a few simple sentences, place them on the black-board, and let pupils copy them.

The original sentences are the outgrowth of some lesson in nature work, or are selected from oral reproductions of stories or from the reading. By taking note of the clearest statements and having these repeated, an oral composition is developed which leads to the written one. In correcting the language of the pupil, I allow him to complete his story, and then have some bright pupil make the correct statement. The child will soon recognize the correct form and thus acquire a habit of speaking correctly.

After the children are thoroughly familiar with the sentence form, dictated sentences are given. They are drawn from nature work or from reading. The spelling is taught by the analysis and synthesis of words by their phonetic elements.

Adelaide Burnett, Class Teacher, P. S. No. 58.

SECOND YEAR—SECOND HALF.

Course of Study.—Conversations as in the preceding grade, and upon the food, habits, and characteristics of familiar animals; upon the leaves, flowers, and fruits of familiar plants, and upon the conditions of their growth; oral reproductions of fables, tales, and stories; copying short paragraphs; writing original and dictated sentences; special attention to the correct use of language; recitation of prose and poetry.

From the course of study it may be seen that language work is made to grow out of the subject-matter of the content studies. The effect of good teaching is clear thinking, and clear thinking leads to correct expression. Hence, the teacher tries to increase the child's knowledge, in order that he may have something to express in writing.

Plan of lesson given on "The Cat."—The teacher asks children what a cat eats, and as their answers are given, she writes them on the blackboard in abbreviated form:

$$\text{A cat eats}\left\{\begin{array}{l}\text{meat, fish,}\\ \text{mice, birds,}\\ \text{bread, porridge.}\end{array}\right.$$

Deduce the fact that it eats both vegetable and animal food, but prefers animal food. Call attention to the sharp teeth.

Ask where the cat gets the mice. Some one who has seen it catch a mouse describes its actions. Direct attention to the claw-sheath and cushioned feet. From this conversation, draw the facts that the cat is patient in waiting for prey, sly, quick in pouncing, cruel to her prey. Write on the blackboard

$$\text{The cat is}\left\{\begin{array}{l}\text{sly, patient,}\\ \text{quick, cruel.}\end{array}\right.$$

After questioning about its behavior while in the house and towards people, add that:

$$\text{The cat is}\begin{cases}\text{playful,}\\ \text{fond of sleeping,}\\ \text{affectionate,}\\ \text{fond of place.}\end{cases}$$

Illustrate its fondness of place by stories of cats that have refused to move with families.

Ask "Who has seen a cat escape from a dog?" The child who has may say: "It can spring to the top of a fence or climb a tree." Add to the list on blackboard that:

$$\text{The cat}\begin{cases}\text{springs several feet,}\\ \text{climbs easily.}\end{cases}$$

Cats can climb a tree, but cannot come down as a squirrel does. Ask the children why.

The synopsis of each group of facts may now be read by the class, and pupils be encouraged to copy in full whatever they contributed to the work, and any other portion that interests them. This is the first step in written composition.

Winifred G. Ochlhoff, Class Teacher, P. S. No. 9.

SECOND YEAR—SECOND HALF.

Practically the writing of "original and dictated sentences," and the "copying of short paragraphs," constitute the prescribed course in Composition in this grade. The work is largely supplementary to that done in the preceding grade, in which words and their meanings and application form the basis of study in this subject.

From words which have been dictated the children select one or more for use in original sentences. As these words have been made familiar in the lessons of the grade, they suggest the subject matter; so the thought being in the mind, the pupil is free to choose his mode of expression when describing familiar objects or personal experiences.

One method which I have found very effective in the correction of the errors is to allow the children to read to the class the sentences constructed by them. If they are unable to correct their mistakes, other pupils are permitted to assist them. This gives each member of the class an opportunity to compare his work with the form of expression used by the pupils that speak the best English. Children are quick to decide which is the best model and to imitate it. This exercise is, moreover, a preparation for the work of "Dictated Sentences," which follows.

Sentences from fables, stories, etc, which have been related in connection with some subject of the grade, are reproduced by the children, orally, and written upon the blackboard by the teacher.

After perusal they are erased and dictated to the class. They are again placed on the blackboard for inspection and comparison. Errors in capitalization, punctuation and spelling are noted. For a second time the sentences are erased and dictated.

The part of this work termed "Copying short paragraphs" is a logical outcome of conversation upon various subjects of the grade work, such as nature study, national holidays, important personages, etc.

To broaden the imagination and further cultivate expression, pictures and other illustrations are introduced. Correct statements, expressing the thoughts suggested by the pictures having been obtained from a number of the children, an appropriate selection is made from them, arranged as a paragraph, written upon the blackboard, and afterward copied by the class. When practicable, to more readily elicit from the children direct responses regarding salient features of the pictures, the method of suggestive questioning is used.

During all oral as well as written work, close attention is given to the correct use of language.

Anna M. Ettinger, Class Teacher, P. S. No. 163.

THIRD YEAR—FIRST HALF.

In this grade we have conversation upon tales, stories, animals and birds. From these conversations the child reproduces in his own language whatever he thinks worthy of record. Descriptions of animals and birds are generally written from topical outlines which the teacher puts on the blackboard. In addition, the teacher tells or reads short fables and myths. These are reproduced from memory by the children. The simple standard letter form is taught from the blackboard, and later the child uses this form in writing original letters.

In the conversation work, special attention is given to the correct use of language, and this work is correlated with reading and nature study.

When the compositions are written the child is sometimes allowed to illustrate his own work either by memory or copied drawings, or by pasting on his paper pictures relating to the subject.

The method of correcting or indicating the mistakes is as follows: The child writes a rough draft of his thoughts. The teacher then calls attention to the errors in spelling, punctuation and language by pointing out the most common mistakes to the class as a whole, and each child is afterward encouraged to correct his own work. Once a month, however, she herself corrects the individual papers of the children, and each child re-copies his work from this corrected draft.

Elizabeth Brundage, Class Teacher, P. S. No. 87.

THIRD YEAR—SECOND HALF.

The Course of Study outlines the work in composition for t third year, second half, as follows : " Brief compositions based up familiar objects, pictures, incidents, and individual experience This division permits during the school term five weekly compo tions under each heading.

Grade 3B is the first in which the child is forced to depend e tirely upon himself for the logical arrangement of the written e pression of thought, compositions in the grade preceding being fr suggestive questions or topical outlines.

The subject for composition having been assigned, during p of the time allotted to conversation lessons the pupils are asked tell all they have learned in reference to it. Attention is fixed whatever is worth remembering, and necessary facts that cannot elicited by questioning are given to the pupils. In this way, wh the time comes for writing, they have a fund of information which they can draw.

The following is the method employed by me in giving a less in which a picture is used for descriptive and imaginative work : In some cases individual pictures are distributed, but general only one is placed before the children, who quietly study it a then tell what they see. They are trained not only to notice t objects, but their relations ; they are led to study the picture wi a view to the discovery of those facts which may be inferred, as t time of day, the season, the character of the people, etc. ; they a questioned for the purpose of suggesting the things they have faile to notice. The pupils are now ready to write in story form the own interpretation of the picture.

After the compositions have been written, the general mistake as the wrong use of capitals, misspelled words, etc., are correct by the little authors.

After the preparatory instruction, let the pupils write the con position. When the limit of time is reached let one pupil read h effort aloud and make the form and scope the subject of a sho criticism. Call for the reading of other efforts containing addition facts or presenting a different arrangement of matter. Encoura the class to make comparisons and to correct verbal and grammatic errors.

Permit the pupils to rearrange, improve and rewrite their worl The teacher should render direct assistance to as many pupils possible during each exercise, but the pupil's power to revise h own work should be the test of successful teaching.

Frances Morris, Class Teacher, P. S. No. 46.

FOURTH YEAR—FIRST HALF.

Composition in the fourth year, first half, calls for writte reproductions of short stories and of oral instruction received i history, geography, and elementary science ; and for statements of ndividual experiences.

In teaching, appliances (maps, charts, pictures, etc.), that contribute to the child's better understanding of the subject in hand were used. The pupils were encouraged to visit, if possible, places of historic interest in New York City, and to read library books relating to the studies of the grade. Current events, such as the Dewey celebration, the centenary of Washington's death, historic events, such as the first Thanksgiving by the Pilgrims, and similar topics, were discussed in the class-room by teacher and pupils.

One subject a week having been fully explained by the teacher, the pupils were required to write what they remembered about it. The collected papers were criticised orally in respect to thought and expression, by both teacher and pupil.

One set a month, however, received the careful personal criticism and correction of the teacher, all errors in punctuation being designated by the letter P, those in capitalization by C, and and spelling by S. The corrected words were placed on the board, and the work was re-written by the pupils.

The same method applies to all subjects under this head. In letter-writing, the pupils were called upon to write a note asking some friend to visit them, or to write one of thanks for some invitation or gift received ; this was followed by a letter to a schoolmate, parent or teacher.

Minnie Shadel, Class Teacher, P. S. No. 22.

FOURTH YEAR—SECOND HALF.

The Course of Study as it applies to the second half of the fourth year, requires written compositions of the following kinds : Historical stories, biographies, individual experiences, description of objects connected with elementary science ; letter-writing ; notes and letters of friendship.

A composition on one of these subjects is written in school in the presence of the class teacher once a week. These efforts are then collected and are subsequently returned to the pupils with errors indicated by the teacher, who uses for the purpose of correction the code of symbols employed throughout the department.

Notes are made of the prevailing errors in paragraph divisions, capitalization, spelling, etc. These furnish the teacher with information that guides her in conducting the language work of the grade.

The pupils are requested to re write their compositions once a week after the originals have passed the scrutiny of the teacher. In this school particular attention is given to composition owing to the fact that the population of the district is made up largely of Russians and Bohemians. Ninety-eight per cent. of our pupils speak a foreign language at home.

Mary C. Jackson, Class Teacher, P. S. No. 75.

FIFTH YEAR—FIRST HALF.

This grade calls for narrative and descriptive compositions; letters of friendship, inquiry and application.

The children of this class come from homes having the following conditions:—

Parents of Italian birth	24
" " German "	8
" " Russian, French and Belgian birth	5
" " Irish, English and Scottish birth	10
" " American birth	1
" unable to write English	22
" unable to understand English	12

Teaching English composition has its difficulties; but when, to the usual problem, the factor of foreign-born parentage is added, together with environments that offer few, if any, opportunities for literary study, the task becomes still more difficult.

During the five years preceding school life, years that furnish so much to the child's vocabulary, these children speak only in foreign tongues: therefore, the foundation in English is practically lacking, nor can the school entirely supply it.

This limitation is apparent in all the language lesson, and calls for an unusual amount of drill in simple sentence work, to develop the habit of expressing thought in sentences modeled on English forms. The mass of material given by the pupil is often very chaotic, even though the subject be a very familiar one. This material must be rearranged so that the thought structure may be made clear, sentence by sentence. At first the teacher leads in the rearrangement of the work but the burden of reconstruction is placed eventually upon the pupils.

Besides writing the weekly composition in school, the pupils of this grade are encouraged to write at home paragraphs describing and narrating their own experiences. Many of them bring these paragraphs to school for the teacher's inspection, and they are read, discussed and corrected in the class-room.

To train the critical habit, copies of pupils' compositions, sentences and phrases are placed upon the blackboard for class criticism. A very few diacritical marks are employed to indicate definite errors. Their purpose is merely to say to the child, "Something is wrong; find out what it is; correct it."

After the children are familiar with its content, the reading lesson is used to illustrate construction, attention being called to various "good ways of saying things." All subjects are taxed to furnish practice in acquiring ease in thought expression, even arithmetic yielding its quota, and all, in this way, make for unity.

Sarah M. Ferguson, Class Teacher, P. S. No. 8.

FIFTH YEAR—FIRST HALF.

Careful attention is given to the matter of selecting topics that be of interest to the children—a number being based on the ons in history, geography, and elementary science. Letters are ;ten once a month.

The subject is presented to the class for consideration early in week, and the children are encouraged to consult books of ref- ıce at the neighboring library. The subject is then made the s of the language-lesson in the class-room. After a thorough ussion of the subject matter, the compositions are written.

These efforts of the pupils are written in school, in the presence ıe class teacher. They are then collected and are subsequently rned to the pupils with the errors indicated by the teacher, who ı for the purpose of correction the code of symbols employed ›ughout the department. The pupils are requested to re-write r compositions after the originals have passed the scrutiny of teacher.

Particular attention is given to this subject, owing to the fact in this school, situated as it is in a district made up largely of sians and Bohemians, ninety-eight per cent. of the pupils speak reign language at home.

Maud I. Price, Class Teacher, P. S. No. 75.

FIFTH YEAR—SECOND HALF.

Course of Study.—Narrative and descriptive; the elaboration hort stories supplied by the teacher; letter-writing—business s; letters expressive of the pupils' individual experiences.

Methods.—In the selection of subjects, care is taken to cor- ;e the composition work with the other studies of the grade, as ›ry, geography, zoology, literature, etc. In letter-writing, ;s that will be of practical value to the pupils are selected.

Pupils are encouraged to illustrate their compositions with : own little sketches and also by the use of pictures obtained ı magazines, advertisements, etc.

Ihe subject of the composition is first thoroughly discussed by ›eacher of the class. While writing, no question is allowed to ›ked, perfect silence being demanded, that the children may their full attention to the subject in hand.

During the week, every composition is read by the teacher and › are made of the most common errors in composition, punctu- ı, and spelling. Very poor sentences are marked with a cross. or three days after the writing, the compositions are returned e pupils, who correct their own mistakes. The poor sentences ead in class, and oral corrections are encouraged.

When a composition is to be re-written, the teacher indicates ›rrors by marks in the margin. The children correct these s as indicated, and make a clean copy of the work.

The following is the Code of Signs used in correction:

S.—Spelling.
P.—Punctuation.
gr.—Grammar.
C.—Capital.
no C.—No capital.
P.—Paragraph.
no P.—No paragrap
w.—Wrong word.
o.—Omit.
x.—Poor sentence.

Viola Yoerg, Class Teacher, P. S. N

FIFTH YEAR—SECOND HALF.

The work in composition, however, cannot be consider
isolated fragment of the school curriculum. It is rather a p
that branch of its educative process which deals with the fo
contrasted with the content studies. The intimate and vita
nection between these two branches of school work must alw
kept in mind lest empty verbalism be used to express vag
hazy knowledge.

Correct expression leads to thinking; words are the i
that show the mental train which is engaging the activity
pupil. "Definite thought means definite expression, while
expression means equally vague thought. No act of thou
complete until its products have been set forth in words."
care is consequently taken that proper expression accompan
thought work.

The compositions in this class are intended to train the
faculty by inducing in the child an orderly and well-ar
sequence of ideas, based not merely upon sensuous associ
but rather upon an organic unity of causal connections.

The imagination of the child, that faculty, of all, the mo
jective, and the least capable of direct training, was calle
activity in two ways: first, through cultivating its expressi
means of illustrative drawings; and secondly, by presenting
educative material to call forth the appropriate activity.
from nature, stories from history and geography, which caus
pupils to create ideal scenes, were used for this purpose, in c
tion with selections from literature—the crystallized experi
the race.

The moral nature of the child was reached by the prese
of stories having an ethical content, which aroused and e
the pupils' interest in behalf of the good, the true, and th
tiful.

Finally, the grade requires that some attention be given
tain conventional modes of expression, which, while not
any intrinsic, ethical, or specially high intellectual value,
importance in enabling the child to adapt herself to her e
ment. Business letters designed to fill this requirement of
day life were written frequently.

The work in composition consequently aimed at the harmonious elopment of all the powers of mental life that can be expressed language. The method was such as would employ, to the great- extent possible, the self-activity of the child. For the sake of venience, we shall divide the method into two parts.

THE METHOD OF WRITING.—If the subject of the composition s one that had been taken up previously in one of the branches the class-room work, the preparation consisted of an orderly iew of the salient points of the lesson. If the matter was new, was presented to, and discussed by the pupils, and the composi- ns were then written.

THE METHOD OF CORRECTION.—The compositions were partly rected by the pupils themselves. This was accomplished by a e exchange of question and answer between teacher and pupils. e class were then called upon to correct all errors in their own nposition similar in nature to those pointed out. The composi- ns were afterwards collected and inspected by the teacher, who icated all mistakes left unnoticed by the writer. A short period h week was devoted to the consideration of the errors thus indi- ed.

The aim of the mere formal side was to attune the ear to good glish, to have the child avoid all poor forms of expression with- t a constant appeal to the rules, and to arouse an interest for the t literature by developing an appreciation for literary master- ces that can come only to him who has to emulate the works of ose

"Whose music is the gladness of the world."

Lillian Darling, Class Teacher, P. S. No. 147.

SIXTH YEAR—FIRST HALF.

The Course of Study for this year, requires short biographies of entors, statesmen, writers; compositions on current events, and ial letters.

Eighty-five per cent. of the pupils are of foreign extraction. e greater number never hear a word of English spoken in their mes. Their knowledge of our language is gained principally in e school-room; consequently, the exercises in composition require ch careful thought and preparation on the part of the instructor.

The first object to be gained is an intelligent comprehension and preciation of the subject under consideration. This I endeavor obtain in different ways. A boy is asked to read his composi- n; the class criticises it, and errors not noticed by them are made ident by carefully prepared questions addressed to the brighter ys. So as to hold the attention of the class to the subject matter the composition, only a few errors at a time are treated in this anner.

There are always, in every grade, boys who excel. These are requested to read their productions, the class deciding upon their merit as to the best English, the most original presentation, and the highest intellectual effort. The others are then urged to imitate and to surpass the leaders.

At another time, the compositions are circulated among the scholars, who mark one another's work by using a few simple symbols placed under the mistake or in the margin, so that a pupil may be directed to look for the error and correct it according to his understanding.

When writing biographies, the pupils are encouraged to obtain all the information possible, by going to the free circulating libraries. With their knowledge and my assistance, notes are placed upon the board. These embrace the principal events in the life of the hero arranged in the order of time, and guide the pupils in making clear, simple and concise statements. As a stimulus we keep an "Honor Roll" of the boys making the greatest improvement in composition.

Each month the teacher is required to correct a full set of compositions. The errors in these are corrected by writing in the full statement instead of using symbols to indicate mistakes. I consider this the better plan for the pupils of this school, especially when weeks elapse between the writing by the pupils and the correction by the teacher.

The compositions are, as far as possible, correlated with other subjects of the grade, and are illustrated with drawings. My aim is to teach freedom and ease in composition, to awaken in the minds of the boys a love for good literature, and to sow the seed which may in the future tend to the development of a well rounded character.

Agnes M. Walker, Class Teacher, P. S. No. 1.

SIXTH YEAR—FIRST HALF.

In the biography work, it is customary to give out the subject on Friday afternoon. The children are expected to look it up for themselves, using their supplementary readers, library books, and encyclopedias for reference. In the first lesson, a general idea is obtained of the information that has been gathered by the children. Additional facts are supplied by the teacher. After that, the subject matter is arranged, using the topical method. The paragraph headings are placed on the blackboard, and the children fill in the paragraphs for themselves.

In "business forms," the girls are taught to write letters of introduction and application, orders for goods, complaints and inquiries. Other business letters are used in connection with dictation exercises. It has been found expedient to have a model letter read and discussed before any writing is done.

In social letter writing, the great difficulty is to obtain spontaneity. If a letter written by the teacher is read to the girls, the introduction of the individual element makes their answers less formal. This was done in connection with their "personal ambition" letter. The teacher wrote an intimate, friendly letter, asking the girls to tell her what they intended to do when they were older. The personal chord was touched, and their answers were comparatively original and honest.

We try to correct the compositions in as many different ways as possible, in order to awaken interest. One plan is to have the class develop a topic sentence into a paragraph and have several read, letting the class discuss and criticize. Or again, the work is completed, passed in, and we look over it, indicating the glaring errors, employing a code, which is in use throughout the school.

The work is then returned to the girls, and one composition is written upon the blackboard for the class to correct orally. After that, each girl treats her own essay in the same way.

Another method of correction is to take the work home, look over it, and make a note of the most frequent errors. When it is returned, attention is called to the mistakes, and the girls make their own corrections.

One composition each month receives the careful, personal supervision of the teacher, and all errors are corrected by her.

Our aim is to train the girls to express themselves grammatically, clearly and fluently. The development of the critical spirit in the child is the most important factor. When this is obtained, she has become self-helpful, and the main work of composition is accomplished.

Mathilda Beck, *Mary Louise Bishop*, *Class Teachers*, *P. S. No.* 6.

SIXTH YEAR—SECOND HALF.

The Course of Study as applied to this grade requires: Compositions—on current events; criticism and notice of books; historical studies; letter writing as in previous grades.

METHODS.—All composition subjects are treated orally in the class, the subject matter being discussed as to choice of words, the manner of introduction, the facts for the body of the work, and the form of the conclusion. Subjects are selected and given to the class one or two weeks before writing so that all may have an opportunity to gain facts pertaining to them. If the subject chosen be a picture, it is placed before the class and fully discussed in all its details; as to beauty, the story the artist intended to portray, as well as interesting facts regarding the artist's life; if a poem, similar treatment is given, the class being made perfectly familiar with the author's idea suggested in the lines.

A rough draft is written, then corrected by individual pupils. The teacher inspects the class work asking suggestions when needed. The composition is then copied in ink as final.

The symbols used in correcting are few and very simple. A dash or line under a word indicates an error of some kind. The child is required to correct the error if able to do so; if not, then the teacher assists

SUBJECTS:

1st week	Letter.	
2nd "	Invitation,	(Informal)
3rd "	Acceptance or Regret,	(Informal)
4th "	Dewey's Reception,	(Current event)
5th "	Soldier's Dream,	(Paraphrasing)
6th "	A Pleasant Walk,	(Personal experience)
7th "	The Acorn's Friend,	(Reproduction)
8th "	My Favorite Season,	(Personal experience)
9th "	Wm. Cullen Bryant,	(Biography)
10th "	The Angelus,	(From picture) (Art and Literature combined)
11th "	Thanksgiving,	(Historical)
12th "	Barbara Frietchie,	(Historical)
13th "	Our Flag,	(Historical)
14th "	Visit to Wanamaker's,	(Personal experience)
15th "	Favorite Authors,	(Notice of Books)
16th "	Charles Dickens,	(Biography)
17th "	Castles in the Air,	(Imaginative)
18th "	Returning a Book,	(Letter form)
19th "	Autobiography of a Pet,	(Imaginative)

Jennie E. Rowe, Class Teacher, P. S. No. 60.

SIXTH YEAR—SECOND HALF.

Point of the Lesson—Composition work consists chiefly in leading the pupils to express their thoughts clearly, concisely, and in the best language, so as to convey the meaning directly without producing ambiguity in the mind of the hearer or reader.

METHOD.—Whenever it is possible, it is judicious to assign the subject a few days before the required time of writing the composition, for the reason, that both preparation and reflection are necessary. No child is able to write upon such topics as current event criticisms of books and historical studies until she has made hers[illegible] acquainted with the record of events and the contents of books.

The work must be planned by the teacher, who guides and rects her class in seeking and obtaining the desired information. general discussion precedes the written work; the class is allo[illegible] to decide upon the salient points. This exercise often helps to [illegible]tify the wrong ideas which have been formed by the children in th preparation of their work.

Business forms require special attention, mainly, in the correct arrangement of the superscription, the introductions and the complimentary ending. After these preliminary steps have been covered, the content of the letter is dwelt upon. A good plan is to allow the children to write several letters upon the blackboard and have them rrected by the class. After the elimination of all useless phraseogy the class will readily grasp what is meant by a correct model.

Social letters expressive of the child's inner life require reflecon on their part. No discussion is deemed advisable here, because ildren are great imitators and their letters show a sameness of exession instead of originality, whenever the teacher suggests the bject-matter.

Summary of the Work:

1st. Preparation for Reflection.

2nd. Discussion before the written work (whenever it is emed necessary).

3rd. Arrangement of topics (whenever the subject matter rmits).

4th. First draft of the compositions.

5th. General errors in construction, grammar, and punctuaon, noted by the teacher and recorded in a blank book.

6th. Typical errors written upon the blackboard, and corrected the individual members of the class.

7th. Compositions revised, improved, and re-written in a ecial blank book.

8th. Compositions are again criticized and corrected by the acher before the final work is sent to the principal of the school.

The keynote of success in this work which is so difficult for ildren, is encouragement. They look anxiously for the words Good" or "Improvement," which sums up the principal's estiate of their progress in this important branch of study.

L. Stork, Class Teacher, P. S. No. 59.

SEVENTH YEAR—FIRST HALF.

In the 7A grade, the course of instruction in composition as tlined for the Boroughs of Manhattan and The Bronx, prescribes ort compositions upon subjects suggested by the historical, geoaphical and literary work of this grade; upon current events, and on the turning points in the history of nations and individuals. tter writing, which forms a part of the work of the grade already mpleted, is continued.

The topics here suggested cover a vast field, and, in the hands of skillful teacher, much may be done in the way of correlation; thus story, geography, grammar, reading, nature study, may serve as basis for composition, while the use of capitals, spelling, punctuaon, and the proper use of words in sentences may be taught in nnection with each essay.

The compositions of this grade may be divided into two classes; ose which deal with facts, and those which are mostly concerned ith individual opinion and experience. In this latter class, we ould include the letters written by the pupils; the former class cludes all compositions upon the historical, geographical, and terary work.

In compositions which deal with facts, it is the teacher's imperative duty to see that these facts are stated unmistakably and sensibly—clearness of idea and statement being the chief essential. In a letter, the teacher's aim should be to teach the pupil to state in an interesting form what he individually thinks and feels. Style is the most valuable characteristic in a personal composition.

As preparatory work in composition, I have had exercises in the uses of "shall and will," in the agreement of the verb with its subject, and others of a similar character; spelling, dictation, the use of words in sentences, and the correction of errors of speech, also constitute a part of this preliminary work. The acquisition of essential facts by the pupils is accomplished by reading and observation.

When the pupil has become sufficiently familiar with a subject to write about it, he is taught to arrange this knowledge under suitable headings; after this, he is led to see and tell the best order in which these topics may be taken, that the proper sequence of facts may be presented.

With this outline or synopsis upon the blackboard, the pupils proceed to put upon paper their thoughts upon the given subject. Great care is necessary upon the part of the teacher, that compositions or letters be not ended too abruptly, as the tendency in this direction is generally very marked. Most of the compositions are corrected by the pupils themselves under my supervision and direction. Several pupils read their compositions, during each lesson. that the others may listen, note the errors, and suggest corrections,

If we would insure good results, English composition must be taught as a habit; one act does not constitute a habit, and one correction will neither remove a bad habit nor establish a good one. Constant vigilance and much advice, suggestion, and correction given again and again are necessary to the training of children in habits of good English.

Amelia A. McCready, Class Teacher P. S. No. 41.

SEVENTH YEAR—SECOND HALF.

The work in composition for the second half of the seventh year is as follows: Short compositions on subjects suggested by the other studies of the grade; brief essays illustrative of the different kinds of composition; social and business correspondence.

I first try to find out how the pupils are able to express themselves on a subject with which they should be familiar; for example, one recently explained to them or a topic of interest. Their efforts reveal their weaknesses, whether in spelling, punctuation, errors of speech, faulty arrangement, introduction of irrelevant matter, paucity of ideas, violation of the rules of composition. Each of these is attacked in turn, particular attention being paid to those that are most general.

Exercises tending to the correction of the various errors are given; selections are read and analyzed for the purpose of finding the unity of the whole and of the several parts and the pupils are encouraged to read along suggested lines. The subject for composition is assigned, and in order that the proper sequence and unity may be preserved, the data for the various paragraphs are given.

During the second stage of the work the pupils must find their own data, and make their own arrangement, the subject for the composition being assigned. Later on the pupils are at liberty to choose their own subjects. As they become acquainted with the various figures of speech they are encouraged to use them in their composition.

One composition of each pupil is critically examined each month, the errors being suggested by a set of symbols. Again a few are read to the class for general criticism, and the pupils are permitted to criticise one another's compositions. All compositions are rewritten.

Joseph G. Furey, *Class Teacher P. S. No.* 40.

SEVENTH YEAR—SECOND HALF.

In the first group of subjects for composition, the work of the pupil is largely confined to the clear and correct expression of the subjects of the various studies presented in class. In the second group, the end in view is to encourage originality of thought, the pupil being restricted only as to form and length of treatment. In the third group, the formal parts of a letter having been mastered in the preceding grades, the work is particularly directed to the body of the letter; in social correspondence the aim is to produce a natural and familiar style; in business correspondence, a concise, clear, and courteous style.

The method of teaching consists of a discussion of the subject matter, followed by preliminary exercises leading up to the regular composition of the week. These preliminary exercises occupy from ten to fifteen minutes on three or four days of the week, and take the form of a paragraph in which the subject-matter is confined to the expression of thoughts relating to one topic or division of the subject. These are criticised orally with respect to thought and expression by the teacher and the pupils. After this preparation, an outline containing the titles of the topics of the daily exercises, is made for the regular composition of the week. With this outline as a guide, the pupils begin the regular composition.

As many of the compositions as the alloted time will permit are read aloud by the respective writers and criticized by teacher and by pupils. Pupils are encouraged to make independent criticism and correction and to consult the grammar, dictionary and encyclopedia. Once a month one complete set of compositions receives the careful personal correction and criticism of the class teacher, and this set is re-written by the pupils.

David Birch, *Class Teacher*, *P. S. No.* 95.

Word Study.

INTRODUCTION.

Words are solemn things.—*Oliver Wendell Holmes.*

THE purpose of Word Study may be thus stated: 1. To enrich the pupils' spoken and written language; 2. To train them in correct pronunciation; 3. To help them to write words correctly from memory; 4. To aid them to understand the meaning of words.

The words selected should be confined largely to those occurring in the reading matter of the grade. They should be studied carefully, not only as to their meaning in the context, but also as to their radical and derivative meanings.

The practice that formerly obtained of teaching children, by rote, during a term, the definitions of one hundred or one hundred and fifty words, often led to ridiculous results when the children tried to fit the definitions they remembered to the *wrong* words.

Caroline B. Le Row in her "English As It Is Taught," has shown the result of this method of teaching the definitions of words and I present a few examples taken from her book;

Alias—A good man in the Bible.
Ammonia—Food for the Gods.
Animosity—A sudden surprise.
Beneficence—A state of insanity.
Demagogue—A vessel containing beer and other liquids.
Republican—A sinner mentioned in the Bible.
Parasite—A sort of bird.
Obelisk—One of the marks of punctuation.

Appropos of this, I recall the story of the young teacher who taught her class, *in concert*, the definition of noun—"name of any person, place or thing,"—just as it appeared at the beginning of the chapter in Goold Brown—and was horrified to hear her brightest pupil answer a question put by the "examiner," that "organ-grinder is a noun because it is *the name of a person plays a thing.*"

In the upper grades where each pupil is given a dictionary, many teachers still persist in giving lists of words for which pupils are to find meanings in the dictionary and then form sentences which are heard in the class-room the next day. A teacher who

ed this method and had dictated a list of words, after running
e over the page of the dictionary where the words began with
s regaled with answers like this the next morning:
rotuberance: (Definition) "Something that protrudes; a
" (Sentence) "He hurt his head against the protuberance
door."
roficiency: (Definition) "The state or quality of being pro-
t." (Sentence) "His father whipped him because he was
iency in his lessons."
reponderance: (Definition) "The state or quality of being
nderant." (Sentence) "He had a preponderance of apples."
nd so on. This teacher really wondered what *was* the matter
those boys. She felt that *she* certainly was not to blame as
t them make "use of the dictionary," as the course of study
nded.

Word Study.

SECOND YEAR—FIRST HALF.

HE sub-division of this course called "Word Study," includes
copying sentences, writing original and dictated sentences,
special attention to the correct use of language, exercises to
ate the power of pronouncing new words with the aid of dia-
al markings; the derivation, meaning and use of words, and
ery simple synonyms, and antonyms.

he pupils of the First Year after some slight practice in copy-
asy words and sentences, and in the analysis and synthesis of
s by their phonetic elements, are, now, at the beginning of the
d year, to give written expression to what has heretofore been
ly oral.

t first, the work is mainly a review of the simple, familiar
s containing the long and the short sounds of *a* and *e*, and the
ng of copied or dictated sentences formed by the pupils, who,
for the first time are taught spelling. The capital at the begin-
and the period at the end of the sentence, are insisted upon.
ncidental feature of this sentence work is the noting of the
ber inflections of nouns having regular plurals, and to the cor-
nding inflections of simple verbs in agreement therewith.

Attention is given to sentences containing familiar words illus-
ve of the various sounds of *e*, *i*, and *u*; also to the formation of
irregular plural nouns; and to the proper uses of *is*, *are*, *has*
have. After these, come a few simple time inflections of verbs
the names of familiar animals, their young and the character-
articulate cries.

About the middle of the term, a list of words containing the
ds of *o*, is taken from original sentences; also of words which
n and end with the sounds of *sh* and *ch* respectively, including

Word Study.

INTRODUCTION.

Words are solemn things.—*Oliver Wendell Holmes.*

THE purpose of Word Study may be thus stated: 1. To enrich the pupils' spoken and written language; 2. To train them in correct pronunciation; 3. To help them to write words correctly from memory; 4. To aid them to understand the meaning of words.

The words selected should be confined largely to those occurring in the reading matter of the grade. They should be studied carefully, not only as to their meaning in the context, but also as to their radical and derivative meanings.

The practice that formerly obtained of teaching children, by rote, during a term, the definitions of one hundred or one hundred and fifty words, often led to ridiculous results when the children tried to fit the definitions they remembered to the *wrong* words.

Caroline B. Le Row in her "English As It Is Taught," has shown the result of this method of teaching the definitions of words and I present a few examples taken from her book;

Alias—A good man in the Bible.
Ammonia—Food for the Gods.
Animosity—A sudden surprise.
Beneficence—A state of insanity.
Demagogue—A vessel containing beer and other liquids.
Republican—A sinner mentioned in the Bible.
Parasite—A sort of bird.
Obelisk—One of the marks of punctuation.

Appropos of this, I recall the story of the young teacher who taught her class, *in concert*, the definition of noun—"name of any person, place or thing,"—just as it appeared at the beginning of the chapter in Goold Brown—and was horrified to hear her brightest pupil answer a question put by the "examiner," that "organ-grinder is a noun because it is *the name of a person plays a thing!*"

In the upper grades where each pupil is given a dictionary, many teachers still persist in giving lists of words for which pupils' are to find meanings in the dictionary and then form sentences which are heard in the class-room the next day. A teacher who pursued this method and had dictated a list of words, after running her eye over the page of the dictionary where the words began with P, was regaled with answers like this the next morning:

Protuberance: (Definition) "Something that protrudes; a knob." (Sentence) "He hurt his head against the protuberance of the door."

Proficiency: (Definition) "The state or quality of being proficient." (Sentence) "His father whipped him because he was proficiency in his lessons."

Preponderance: (Definition) "The state or quality of being preponderant." (Sentence) "He had a preponderance of apples."

And so on. This teacher really wondered what *was* the matter with *those boys*. She felt that *she* certainly was not to blame as she let them make "use of the dictionary," as the course of study demanded.

Word Study.

SECOND YEAR—FIRST HALF.

THE sub-division of this course called "Word Study," includes copying sentences, writing original and dictated sentences, special attention to the correct use of language, exercises to cultivate the power of pronouncing new words with the aid of diacritical markings; the derivation, meaning and use of words, and also very simple synonyms, and antonyms.

The pupils of the First Year after some slight practice in copying easy words and sentences, and in the analysis and synthesis of words by their phonetic elements, are, now, at the beginning of the second year, to give written expression to what has heretofore been mostly oral.

At first, the work is mainly a review of the simple, familiar words containing the long and the short sounds of *a* and *e*, and the writing of copied or dictated sentences formed by the pupils, who, now, for the first time are taught spelling. The capital at the beginning, and the period at the end of the sentence, are insisted upon. An incidental feature of this sentence work is the noting of the number inflections of nouns having regular plurals, and to the corresponding inflections of simple verbs in agreement therewith.

Attention is given to sentences containing familiar words illustrative of the various sounds of *e*, *i*, and *u*; also to the formation of a few irregular plural nouns; and to the proper uses of *is*, [illegible] and *have*. After these, come a few simple time inflections of [illegible] and the names of familiar animals, their young and the characteristic articulate cries.

About the middle of the term, a list of words containing the sounds of *o*, is tak[illegible] original sentences; also of words which begin and end wi[illegible]ds of *sh* and *ch* respectively. [illegible] a few simple synonyms, and antonyms. Some of the less familiar uses of the words *in* and *into*, are now taught.

In the latter part of the term the attention is focussed on words containing the third, fourth and fifth sounds of *a*, on words beginning with *wh*, and on the homonyms "*to*" and "*two*" with their uses, illustrating their functions in short phrases and sentences. A few demonstrative adjective and adverb words are taught at this stage.

At the end of the term, the pupils are introduced to the beginnings of the study of sentence forms, by being required to express a thought in more ways than one—as affirmative, negative, interrogative. An elementary insight is also given of the subject of etymology by the modifications of very simple words by supplying various terminal endings thereto. There is also a general review of the work of the term. In all the lessons, pains are taken to correlate these exercises with the nature study, the reading lessons, and the written work of this grade.

METHOD.—As an aid in developing the power to recognize and pronounce new words, the phonogram found in some familiar word is employed.

Errors in the writing of words are indicated by simple code marks. Where several errors have occurred, the pupil is required to rewrite the sentence. Words new to the pupil are written by the teacher on the pupils's paper or on the blackboard. The stress here laid on correct forms of expression is due to the fact that the pupils are in many instances the children of immigrants who cannot speak English.

Anna Marie Laube, Class Teacher, P. S. No. 2.

SECOND YEAR—FIRST HALF.

SCOPE.—Diacritical marks; simple homonyms; classification of words—action words, name words, kind words, how and when words; use of *has* and *have*, *this* and *that*; word building.

GENERAL AIM.—To improve the written and spoken language and to increase the vocabulary.

METHOD.—Oral and blackboard review of previous work. By questioning and further use of the blackboard, the children are led to an understanding of the new work. The written work is then given as a final test of the child's knowledge.

METHOD OF CORRECTION.—The children are led to criticize and correct their work by means of a conventional class exercise.

Jennie W. Lennox, Class Teacher, P. S. No. 53.

SECOND YEAR—SECOND HALF.

The word study in this grade consists in "conversations upon the food, habits, and characteristics of familiar animals and plants, oral reproductions of fables, tales, and anecdotes; copying short paragraphs; special attention to the correct use of language, recitation of prose and poetry."

Nearly all the word study in this grade is oral; the pupils are taught to use synonyms, to supply omitted words in sentences; to form the plurals of simple nouns, one tense modification of simple verbs, to construct sentences in affirmative or interrogative forms, and to use simple homonyms in original sentences. The study of the words is correlated with every other lesson; for instance, the children are taught to devise original problems in arithmetic, and the solutions are given in original statements by pupils in turn. The children sometimes give in their own language extracts which have in part been memorized from the substance of poems or prose from the works of standard authors. Particular attention is paid to verbal mistakes in English, each child being expected to correct his or her own errors.

Sometimes a single word reminiscent of a subject taught is put on the black board and the children are asked to tell stories as a test and development of their powers of expression. The various versions given by the little ones form a contribution to the vocabulary of the class.

In conclusion, an exercise is introduced which in some measure throws light on the extent and character of the children's appreciative grasp of what they have learned, and on their skill in the written expression of the words newly acquired in the connection therewith.

Ida Louise Hardy, Class Teacher, P. S. No. 6.

SECOND YEAR—SECOND HALF.

Word study in the latter half of the second school year consists of a series of lessons designated to help the pupils to use correct language, and to give him facility in expressing his thoughts in plain and simple English. Exercises are given daily upon the elementary sounds; words selected from the reading lessons are spelled and pronounced, and other familiar words occuring in the nature lessons or other subjects are explained with illustrations of their meanings.

Where the pupils are mainly of foreign parentage, and hear very little English spoken in their homes, an effort is made to improve their language by systematically correcting their faulty expressions. This is done by means of a series of lessons designed to illustrate the proper use of words commonly misused such as *is* and *are*, *has* and *have*. A talk precedes each lesson. The children give original sentences of which a few of the best are selected to be written.

Contractions and abbreviations with their meanings are explained to the children who then give illustrations of their uses.

Particular attention is then given to plurals, especially those formed irregularly, keeping in view the earlier lessons in the use of the words *is* and *are*, which terms are reviewed incidentally in correlation lessons. When the children are proficient in this direction, they are led to apprehend some homonyms, mostly those encountered in the lessons of the grade. The children being now able to discern by means of the sound elements, the words that sound alike, they are next taught the spelling and the meaning, with examples of the appropriate use of each word in brief phrases or sentences.

Antonyms follow the homonyms. The child will be apt to bring in some of the ideas acquired during the nature lessons which afford special opportunity for the exercise of his faculty of comparison, often resulting in the necessity for the use of antonymous terms. A further step is to dictate an elliptical sentence on some familiar subject, and require the child to supply the missing word.

By means of talks on a few, short, simple poems which the children have memorized, the road is opened for the beginnings of literary study in the elementary schools. Not until such conversations have taken place, can the children appreciate the beauties of the poem and its relation to other subjects. Similarly a few choice quotations are selected from the reading book after the explanation of the passages and the children will, with an intelligent grasp of the content, be able to write them.

When the pupils have been sufficiently drilled on various ways of expressing themselves, as by means of supplying elliptical words, by using the correct word in the right place, by the suitable use of subjects and verbs, homonyms of a more difficult degree are explained with the meaning of each and illustrations of its use in a sentence. Five specimen sentences framed by the pupils are selected and the children write two of these, using homonyms in each sentence.

In order to secure an exhibit of the work of the class as a whole the children are encouraged to recall words expressing thoughts which the month or season would suggest. The best words found being about snow, the children are allowed to select any three of the words and modify them by adding the suffix "ing".

Each child then constructed two sentences, using some of the words already selected. This exercise is concluded by taking a few quotations and the reading of an appropriate poem.

Margaret A. V. Hoare, Class Teacher, P. S. No. 144.

THIRD YEAR—FIRST HALF.

The course includes, "the meanings and uses of words and important illustrations of their use in phrases and sentences as well as in the recitations of prose and poetry ; and in the reproduction of fables, stories and tales."

The work is mainly oral. Words, phrases and sentences, are
lected from all the reading matter, other words of a synonymous
aracter are substituted therefor ; phrases and sentences are repro-
ıced in the pupils' own words ; some of these sentences are written,
e modifications of nouns and verbs as to number are continued ;
few tense inflections of verbs are taught and the work of expres-
ıg in different grammatical forms is continued.

The correct use of homonyms and synonyms is taught and
plained, in sentences oral and written. In illustrating meanings
ıd uses of words recourse is had to the method of word substitu-
ɔn, and the supplying of omitted words. Sentences are written
r the pupils, from copy or dictation, the words to be replaced
ing underlined. In the recitation of prose and poetry, a verse is
arned as a memory gem, and certain extracts are paraphrased by
e pupils.

This branch of study, is carried on in connection with the lan-
ıage work proper, and to a great extent with all their other studies.
the treatment of each of the subjects of the curriculum, the
ildren are trained to talk, care being taken to amend and enlarge
eir vocabulary by means of oral corrections, criticisms and sugges-
ɔns. Written exercises are in some instances given to test the
fficiency of the oral work, and show the results of the instruction
ɔon the pupils individually and collectively.

Elizabeth Mahony, *Class Teacher*, *P. S. No.* 6.

THIRD YEAR—FIRST HALF.

A part of the work in this subject consists of lessons on special
pics designed as far as possible to meet the needs of the pupils of
reign parentage. For this reason the lessons which are given
ıily serve to correct foreign expressions, and gradually lead the
ıild to better use of language.

Word Study is a part of the class exercise in English composi-
on, which it invariably precedes. Abundant material by exercises
this kind is obtained from observations and criticisms of the lan-
ıage of the pupils, in connection with the teaching of the various
ıbjects of the grade. Their faulty expressions being then noted,
ıd attention is again called to them, and a written exercise some-
mes follows as a test of the efficiency of the instruction.

To make this work more methodical and for the purpose of
oiding needless repetitions, such errors are recorded weekly and
ıose that are glaring or of general occurrence, receive special
tention. Homonyms being particularly liable to be misunder-
ood, require special drills in the first few weeks of the term.

Exercises in supplying omitted words and in forming sentences
ıvolving the use of verbs are taken up at a later day.

Possessives, antonyms, words selected from poems and the
ıpplying of appropriate adjectives in phrases or sentences con-

stitute the drill work toward the middle of the school term. Sometimes a diversion is indulged in, whereby the subject matter of the drill becomes varied, and the mere form of the word affords the basis of a drill: for example—the syllable *ing* is chosen. The pupils are requested to name a number of words ending in *ing*. Sentences are formed, some containing the simple words, others the root word with the suffix. The most available of these words are then written. Any errors occurring in the construction of the sentences are then pointed out, and corrected by the pupils. A verse of poetry for the season and containing a word ending in *ing* is sometimes added and committed to memory. Toward the end of the school term the teacher's plan embraces words containing the letters *gh*, words modified by adding the suffix *ly*; the use of abbreviations, and words that by reason of their comprehensiveness might appropriately form the subject of a composition or a letter.

Stress is laid upon those words that are associated with the ideas developed in the school life. The pupils are encouraged to give spontaneous expression to their thoughts, and to cultivate a freedom of individual expression. The object of the short compositions and letters written in this grade is the establishment of good habits in written work.

Margaret M. McCarthy, *Class Teacher*, *P. S. No.* 144.

THIRD YEAR—SECOND HALF.

The work in Word Study for the term in this grade consists of the following: Exercises in the use of homonyms, synonyms, and antonyms; the putting of name words into sentences in the form of statements, and the changing of these statements to questions; the supplying in elliptical sentences of verbs in different tenses and numbers, and nouns in different numbers.

In changing a sentence to the interrogative form, the children are required to make a statement about a certain thing. The statement is placed on the blackboard by the teacher. Then follows criticism by the class. The children are then required to so change the sentence that it will assume the interrogative form, instead of the declarative. In taking up the study of homonyms, synonyms, and antonyms, the words are carefully explained and illustrated in sentences given by the teacher. Then the children are led to supply corresponding words when the teacher has given certain sets of words of the kind taught.

In supplying verbs and nouns in sentences, the sentences are placed on the blackboard by the teacher, with nouns, or verbs, or both, omitted; then the pupils are called upon to supply the necessary word or words.

A drill on phonograms furnishes an interesting exercise. To illustrate the formation and growth of words, a word in its simplest form is given, various elements are gradually added, each change in the meaning produced by prefix or suffix or inflection being discussed, and the subtile shades of meaning are drawn out from the consciousness or sub-consciousness of the children. It is possible by the study of words in pairs, such as, arbor and tree, grade and step, cent and penny, journey and day, to introduce the beginnings of a knowledge of the historical development of the English language even at this early period of school life.

Isabella Levy, Class Teacher, P. S. No. 82.

THIRD YEAR—SECOND HALF.

Under the Course of Study, this subject although closely correlated with English composition, is pursued with the object of assisting the pupil in a closer study of the word itself, its formation, its growth, its structure, its special use in the text, its other uses and its generic signification.

In the Third Year, besides the ordinary daily exercises in the oral and written spelling of words that occur in the language lessons, and the drills on the meanings of the terms by using them in original sentences, there is a study of words arranged in groups, as synonyms, antonyms, and words that express action, "How" words, " When" words, descriptive terms, words expressing degree, proper names and adjectives, also abbreviations, and the uses of diacritical markings.

A paragraph is given with elliptic spaces to be filled by the pupil. Exercises are given in the correct form of the past tense of verbs, which owing to their irregularity or to other causes are apt to be erroneously rendered by the children.

Corrections are made orally by the children. In case they are unable to do so, the teacher points out the error.

Mary F. Gleason, Class Teacher, P. S. No. 54.

FOURTH YEAR—FIRST HALF.

In the First Half of the Fourth Year, a poem by a standard author is appreciatively studied and memorized.

The vocabulary of the poem furnishes much of the material for the study of the meanings and uses of words. The words are sometimes treated in groups as homonyms, antonyms, synonyms, etc. Easy suffixes are taught, and derivative words are formed from simple primitives.

Other unfamiliar words used in the various lessons are defined and the children are required to show their comprehension of them by properly using them in sentences. The teacher makes an effort to introduce such new words in the daily work, as to arouse the interest of the children in the direction of wider Word Study, and for the purpose of impressing great moral truths.

Careful enunciation is in a measure developed with the aid of diacritical marks, and correct English is always insisted upon.

Words similar in sound but different in meaning and synonymous terms are carefully dwelt upon. In teaching a synonym the resemblances of the meanings are first shown; then, the differences, the children illustrating their grasp of the words by using their original sentences.

In developing the definitions of the terms the synthetical method is almost entirely used. The main purpose of this feature of language work is to enlarge and correct the vocabulary of the child.

Stella Schonfeld, Class Teacher, P. S. No. 13.

FOURTH YEAR—FIRST HALF.

In the First Half of the Fourth school year, this subject embraces root words, prefixes, suffixes and derivatives, with their uses and meanings. The use of diacritical marks is combined and emphasized. Promiscuous words selected from the reading lessons constitute the material for the lessons.

Frequent oral drills are given in the substitution of a synonym for some term of a brief statement. Elliptical sentences are put on the blackboard, the blank to be filled with homonyms as a test in the correct spelling. Occasionally a word or two only are shown, and the pupils requested to insert them orally in suitable sentences. Where the homonyms are verbs, a few tense inflections are introduced. This partially prepares the way for the study of root words prefixes and suffixes.

As an exercise in the appropriate uses of words, the scholars are requested to tell in their own language the meaning of some phrases or sentence. One scholar makes an affirmative statement, and another a negative one on the same subject introducing the antonym. To secure thoroughness of enunciation, diacritical marks are introduced and words containing these are subsequently spelled to test the pupils' knowledge of the same. These are a few of the methods employed to produce fluency and a better command of language.

Minnie Schadel, Class Teacher, P. S. No. 22.

FOURTH YEAR—SECOND HALF.

The object of word study being to enlarge the vocabulary and to promote the use of proper English, abundant opportunities for practice in the use of the dictionary, including the use of diacritical markings, are afforded to every child.

When teaching suffixes, a suitable word is selected from the class poem or the prose reading lesson and its textual meaning is explained. Words familiar to the children and having similar endings are then given by the pupils who thus gradually grasp the meaning of the ending. As a test a drill follows in the use of such words in brief oral sentences. New words are then frequently given and analyzed by the pupils, the suffixes being sometimes underlined. A similar course is pursued in the teaching of prefixes though the methods are often varied for the purpose of correlation and especially to exemplify and make an abiding impression of some moral truth.

These ends as well as the enlargement of the child's vocabulary are always kept in view. The lessons help toward the proper use of adjectives, and adverbs, before any formal grammar work is taken up.

Much success has been experienced in a plan for stimulating thought in word study by dictating elliptical sentences, the blanks to be filled out by the pupil who is sometimes aided by the use of a list from which he may select the misused term. Special attention is given to words frequently confounded, and to prepositions that are inappropriately employed. In all recitations clear and distinct enunciation is insisted upon, special drill being often given to counteract the influences upon the child of non-English extraction.

Rosina Pyne, Class Teacher, P. S. No. 13.

FIFTH YEAR—FIRST HALF.

The course in Word Study for this half year prescribes the "meaning, use, and spelling of new words." In Public School 19, this course has been resolved into the following elements:

SPELLING.—Selected list, including words used in the various subjects of the grade, and words from a text book. Total, including mis-spelled list, 450 words.

DIACRITICAL MARKS.—Review of the marks and their meanings, exercises in marking, as new work.

PHONIC DRILLS.—Exercises selected from reader.

DERIVATION.—Exercises selected from text-book. Latin roots, 4; English prefixes, review, 10; Latin prefixes, new, 13; suffixes, review, 52.

METHOD OF WORK.—Spelling: The words taught in spelling are used as a basis for the teaching of all the other elements. The spelling list is so selected that all the prefixes, suffixes and roots of the grade are represented. In the teaching of a new word, its prefix, suffix, and root are separated, and their meanings obtained. Upon this work the meaning of this word is built. The teacher then gives sentences, showing the use of the word, and requests the same work from the pupils. Illustrations are then searched for by the pupils in whatever books they may be able to procure. In correlation with this work, the advantage of reading books by good authors is shown. In the formation of sentences due attention is paid to grammatical construction.

The teacher obtains synonyms and antonyms and these are treated in the same manner as the original word. Homonyms constitute a large part of the mis-spelled list, which also contains those words most commonly found wrong in the compositions of the pupils.

The roots selected are those from which the largest number of English derivatives have been made, and which occur most frequently in the words of the spelling list. After an affix has been taught, pupils are required to form lists of words containing the same, and, when possible, the root also.

PHONIC DRILLS.—As this school is situated in a section of the city where the foreign element largely predominates, especially the German and Italian, a careful drill in phonics is found necessary.

DIACRITICAL MARKS.—Exercises in the use of diacritical marks are taken up in connection with phonic drills, the purpose being to show pupils how to discover for themselves the pronunciation of a word when they use the dictionary in the next grade.

The words are put on the board, divided into syllables, and sounded. The corresponding marks are then placed. Following this work comes an exercise in marking words in sentences. Special attention is devoted to words which occur in the sentences, and which contain difficulties of pronunciation, or sounds peculiarly difficult to foreigners. Occasionally an exercise is given in the sounding and marking of the phonograms of frequent occurrence in words of the spelling list.

METHOD OF CORRECTION.—Exercises are written in black ink. Corrections by the pupil are marked in pencil. Corrections by the teacher are made in red ink.

Olive M. Jones, Class Teacher, P. S. No. 19.

FIFTH YEAR—SECOND HALF.

The course in Word Study includes the meaning and use and spelling of new words. It has been analyzed into the following parts:

SPELLING.—List of words selected from various subjects of the grade and from a text book. Total including a list of words misspelled, 570.

DIACRITICAL MARKS.—Review of marks taught in the lower grades. Exercise in marking and use of the dictionary, as new work.

PHONIC DRILL.—Exercises selected from reader.

DERIVATION.—Exercises selected from text-book. Latin roots, 8; English prefixes, review, 23; Latin prefixes, new, 15; suffixes, review, 52.

METHOD.—SPELLING.—The words taught form the basis for the other parts of the work. In case a word has a prefix, suffix or root, the meaning of the word is shown by the meanings of the different parts. Teacher and pupils then form sentences to show the many meanings of the word. Pupils are encouraged to improvise sentences illustrating the uses of the word. Attention is given to the grammatical construction of such impromptu sentences. In this connection the teacher endeavors to cultivate in the pupils a taste for the works of good authors.

The spelling list includes words which illustrate the prefixes, suffixes and roots. Synonyms and antonyms of the words are now taken and treated in a like manner. The mis-spelled list consists of words which have been incorrectly spelled in the composition work, and also the most familiar homonyms.

When a prefix, suffix or root has been taught, words containing it are orally recalled by the pupils.

DIACRITICAL MARKS.—These are taught and reviewed in order to make the child familiar with them as they will be a great help in finding the pronunciation of new words and in the use of the dictionary. To insure the correct knowledge of these processes, practice is given by marking words in sentences. These sentences are placed on the board, the words are pronounced slowly and distinctly to bring out the individual sounds, and the marks which denote these sounds are put in place. Occasional exercises in phonograms are given.

PHONIC DRILL.—Where the pupils of the school are, to a large extent, foreigners, they mispronounce letters and words, and render it advisable to have these drills.

CORRECTION.—The pupils write their exercises in black ink, and make their corrections in lead pencil. Corrections by the teacher are make in red ink.

Rose M. Matthews, Class Teacher, P. S. No. 19.

SIXTH YEAR—FIRST HALF.

The plan as shown in the pupils' work comprises twenty typical lessons, indicative of the work done in twenty weeks. The first lesson shows the spelling and syllabication of words ; this method is applied to all the new words taught, and is carried through the term's work. Analysis and use of words are commenced. Sentences are placed upon the blackboard containing blank spaces, which the pupils fill with the word suited to the meaning. The children then go on a hunting expedition, each child for himself. The aim of this is to stimulate self-activity in the child, awaken interest, and add to his vocabulary ; these selections are brought in by the children and tabulated under the heading—"Author's use of Words."

In the second and third weeks, parts of speech are recognized from the meaning and form of the words, and sentences are reconstructed by the substitution of one part of speech for another t express the same thought.

Vowels are reviewed, and rules in spelling governing the wor under discussion are taught. About the fourth week, the first ste toward teaching precision of language is taken. Shades of meanin are recognized. Sentences are placed upon the blackboard, an several words are selected, any one of which might fill the blan space. The children choose the word best calculated to express th precise meaning and place it correctly in the sentence.

The study of roots and derivatives begins about the fifth week Anglo-Saxon roots or primitive words are at first used. Prefixe and suffixes are taught in regular gradation and progress throug the term. Latin roots in simplest form with derivatives follow i their order, and the number is increased as the pupils advanc Words are analyzed, the root discovered, and new words forme from it by the pupils.

The building of new words by means of prefixes and suffixe leads to a study of the parts of speech—nouns become adjectives adjectives, nouns; and verbs take new meanings in regard to tim etc. Thus the lessons proceed until the study and use of word develop a knowledge of English which forms the basis of corre language in the expression of thought.

The use of synonyms is not neglected and the dictionary is i constant demand, the pupils making a study of it with ever lesson.

Note.—In the beginning of the term, corrections are made b the teacher, using symbols similar to those employed in correctin proof; later the children correct errors in class under the supe vision of the teacher.

Mary M. Lilly, Class Teacher, P. S. No. 37.

SIXTH YEAR—FIRST HALF.

The course in Word Study for the sixth year, first half, pre scribes the "meaning, use and spelling of new words." This cours has been resolved into the following elements:

Spelling. Selected list, including words used in the variou subjects of the grade, and words from a text book on spelling including Misspelled List, is 450 words.

Diacritical Marks. Review of the previous grades and exe cises, in using the dictionary.

Phonic Drills. Exercises selected from Fourth Reader.

Derivation. Exercises selected from text book. Roots, 1 Latin. Prefixes, 30 Latin, new. Prefixes, 10 English, review Suffixes, 5 Adjective, new. Suffixes, 52, review.

Method of Work. The words spelled in the class furnish th material for the other work in Word Study. Derivation, for exa e, is shown by annexing prefixes and suffixes to the simple forms English words occurring in the reading lesson.

The knowledge of diacritical marks which the child has received the former grades, is now turned to practical account by the rger use of the dictionary. The child is taught to find the word d its meanings, using his knowledge of diacritical marking to help pronunciation and accentuation. The lessons in phonetics are ven in connection with diacritical marks.

Some of the words, selected from oral and reading lessons, are ouped into homonyms, antonyms and synonyms. The child is ght to resolve his doubts by referring to his dictionary.

In using a new word in sentences, he is encouraged at first, to ice the way in which it is used by some good author, either in class readers or the library books. He is allowed to peruse the ract so noted as a sentence and then he gives an original sentence olving the use of the same term. The reading of good English es him new food for thought besides increasing his vocabulary, ch in many cases is very limited, owing to his home surndings.

Errors are shown to the pupil by red ink marking, as follows: isspelled word is underlined; a caret indicates that a word has n omitted; a slanting line is drawn through the letter, if the ital has been omitted. Errors in meaning are shown by a line ler all the words involved in the statement. Sometimes the rections are made in pencil by the pupils. The work is then tten correctly, showing that the child understands his errors and improved his grammar.

Kate E. Ryan, Class Teacher, P. S. No. 19.

SIXTH YEAR—SECOND HALF.

Select from reading lessons words commonly used colloquially in writing; give simple definitions; vary the words so selected use of different prefixes and suffixes showing meaning and use such. Select from words so chosen a number for illustrative use sentences.

In choice of words prefer those whose roots admit of numerous rivatives. Illustrate in sentences. Call attention to homonyms hen the spelling lesson presents the opportunity. In this conction emphasize the fact that a change of accent may change the rt of speech—also that in derivative words the part of speech is ually determined by the suffix.

Use of synonyms and antonyms.—The dictionary aids in this rk when searching for definitions. In teaching pupils to use the ctionary call attention to the diacritical marks and abbreviations erein employed.

Select geographical names that suggest some interesting fact, derivation being referred to. From Elementary Science (geology), choose words because of their derivation and history.

In review require examples of words introducing the same prefix or suffix; of words showing variations of the same prefix or suffix; of words in which the prefix in one word is similar to the suffix in another; of words illustrating the different meanings of the same prefix or suffix.

Endeavor to illustrate in proverbs, quotations, or poems words whose use has already been taught.

Rose Ralbe, Class Teacher P. S. No. 103.

SIXTH YEAR—SECOND HALF.

The course of Word Study for the sixth year, second half, requires the use of a dictionary and text-books for the spelling, syllabication, pronunciation, derivation, and the meanings and uses of words. Besides the text-books, the material for this work is taken from sentences and paragraphs containing items of interest, such as current events, historical, geographical, and other scientific data, as well as gleanings from critical supplementary reading of standard poetry and prose.

METHOD.

1.—MEANING AND USE.—Words are selected from all subjects taught in the grade, and are classified as parts of speech to be in part correlated with the day's lesson in grammar; a group of verbs is taken and the words are then employed in such manner as to illustrate their modification.

2.—DERIVATIVES.—Instruction is given in the meaning of prefixes and suffixes, the study of Latin and Greek stems, Anglo-Saxon words, and the familiar French words or phrases, together with the literal and current signification.

3.—CONTRAST AND INFLECTION.—Similar and dissimilar points are brought out in synonyms, homonyms, paronyms, in order by such comparisons to guide to a judicious choice of a term to fit the sense and give the clearest expression to the thought.

Under this head, elegance and refinement of diction are illustrated by figures of speech and rhetorical passages, as contrasted with a bare, uncouth statement of the same idea; also the relative merits of a strong, terse style, and one that is imaginative and florid.

Under inflection, a series of lessons is elaborated, in which words assume new meanings, as evident—evidence, minûte—minute, hero—heroine, die, dies, dice.

CORRECTION OF ERRORS.—When in the judgment of the teacher the lessons of the week have had sufficient study, a written test is sometimes given comprehending the main points. Corrections are made and ellipses supplied by the pupils themselves. Each pupil

turn reads her entire paper without interruption. Other pupils
e then invited to criticise the production.

The teacher indicates errors by a code of diacritical marks,
aving the pupils to discover their individual deficiencies from the
eneral corrections made in the class. Glaring mistakes are recti-
ed by patient insistance upon good form until repetition estab-
shes familiarity with what is right and best.

In presenting all subject matter, the child's previously acquired
nowledge is used as a basis for advance work. By question and
view, the child's activity is stimulated so that he becomes recep-
ve—ready to grasp and assimilate the new ideas as far as possible
y his own resources.

Outlines of topics on the blackboard are used to assist the mem-
y, pictures and anecdotes are employed to excite curiosity and
omote the association of ideas.

The aim of these lessons on Word Study is to give the children
greater fluency of speech by increasing their vocabulary, to
oaden their intelligence, to cultivate a taste for pure, correct
nglish, and to lead them to appreciate language as the vehicle of
ought, their character and success in life being largely dependent
on their ability to interpret themselves to the world.

Florence S. Tremper, Class Teacher, P. S. No. 5.

SEVENTH YEAR—FIRST HALF.

The work in Word Study in this grade is largely correlated
th the other subjects taught. In geography and history, the
igin of the names of places is explained etymologically. During
e term, a masterpiece of English poetry is memorized by the
pils and appreciatively studied. As far as possible, the materi-
s for Word Study are gathered from the text.

A stated number of prefixes and suffixes are used by the teachers
the previous grades, where easy English primitives are also built
o derivatives. This work becomes more extended in the seventh
ar. In order that the vocabulary of the pupil may be enlarged,
appropriate uses of such words are made an essential in these
sons.

In the elaboration of the definition of a term, several methods
pursued for thought development. Sometimes separate words
selected for the purpose of recalling their synonymous terms, or
ir homonyms. Special stress is placed upon those which bear
on the faults in speech prevalent in this neighborhood, where the
ildren are of foreign parentage, or else the meanings of words and
rases are taught from the context. Illustrations of these defini-
ns are accepted either in sentences showing original thought, or
quotations from standard authors. Incorrect enunciation is care-
ly criticised and elliptical sentences are not accepted.

The origin and successive uses of a word are given when it will stimulate interest in historic research or point a moral and strengthen the sentiments of patriotism, truth, honesty and other virtues. Original work is encouraged at every step, and the dictionary, the use of which is constantly insisted upon, is in the hands of every child.

Every lesson is carefully developed upon the principles "from the known to the unknown," and "the thought before the expression."

S. Agnes Smith, Class Teacher, P. S. No. 5.

SEVENTH YEAR—SECOND HALF.

Under the head of Reading the Course of Study prescribes, among other things, for the Second Half of the Seventh Year, "the meaning and use and spelling of new words; the choice of words, and discrimination of synonyms.

The object steadily kept in view is the enrichment of the pupil's vocabulary, while at the same time, the proper use of the dictionary is required, and an effort is made to create a liking for the study of words by giving the history of some of those in common use.

Words with whose use the pupils are familiar are carefully analyzed to trace the connection between the etymological meanings, and their various other acceptations. The pupils are required to construct original sentences containing the words discussed, and at the same time they are encouraged to search for them in the newspapers and the books they read, to make copies of the sentences containing the words, and to tell the sense in which such terms are used. Homonyms, antonyms, and synonyms are handled in the same way.

At times a list including some of the selected words previously taught, is written on the blackboard. Sentences are then dictated, from which one or more of those words are omitted, and the pupils are required to supply the same.

This work is supplemented by a brief written test weekly, in analyzing a few of the words. The work being criticised in class by the pupils and the teacher. Towards the end of the term, the history of words in general use is made the subject of a composition.

Joseph G. Furey, Class Teacher, P. S. No. 40.

SEVENTH YEAR—SECOND HALF.

In Word Study in the Seventh Year, Second Half, the aim is not only to obtain a large and rich vocabulary, but so to teach the spelling, orthoepy, and meanings of new words, that the pupils may be better able, both in spoken and written language, to put the right word in the right place. By means of drills on the uses of synonyms, efforts are made to lead the pupil to see that there is a choice of words to be made, and that the word which most clearly conveys the thought is the one to be selected.

The results attempted are: First. A knowledge of the value of the dictionary as a factor in education, enabling the pupils to interpret new words, and thus to have a clear understanding of the thought intended to be conveyed. Second. Greater facility in choosing the words which express most accurately the pupil's own thought. Third. The ability to make use of the phraseology of the definitions in giving expression to knowledge of history, geography, literature. Fourth. A more ready comprehension in reading the advanced literature of the grade. Fifth. A strengthening of the love for classical literature, because of the greater ease with which the scholars are led to understanding the thoughts of the best authors.

One method of teaching a lesson is as follows:

(*a*) A paragraph from a story is dictated to the pupils, new words being spelled for them but not defined: this gives practice in writing English readily, and assists pupils to infer the meaning of each new word, by means of its association with the ideas of the text.

(*b*) During study-hour, the pupils, under the teacher's guidance, find the syllabication, orthoepy, and various meanings of each new word, its primitive and derivative forms, as well as its synonyms and antonyms, using for the purpose the unabridged dictionary. This part of the lesson is correlated with grammar, by determining what part of speech the word and each of its derived forms may be.

(*c*) After due study, the pupils are required to give, individually, the pronounciation of the new words.

(*d*) A conversation follows on the subject of the lesson, that questions may be asked the teacher about the special use of any words not yet clearly understood by the pupils. The teacher is careful to call attention to the different shades of meaning between the given words and their synonyms.

(*e*) Words are then written by the pupils, and their meanings explained and their uses illustrated by sentences, generally oral.

(*f*) The sentences which the pupils have written are read aloud; criticism by the pupils is invited. At this point, care is taken to lead the pupils to discriminate between the sentences that are incorrect or weak, and those that best illustrate the word given.

(*g*) All misspelled words are underlined, and these as well as other mistakes are then corrected by the pupils.

Kate Miller, *Class Teacher*, *P. S. No.* 41.

Nature Study.

INTRODUCTION.

"IT must be remembered that the primary object of nature study is not that the children may get a knowledge of plants and animals. The first purpose of the work is to interest them in nature. This must be done before other desirable results can be obtained. The second purpose is to train and develop the children: *i. e.*, to train them to observe, compare, and express (see, reason, and tell); to cause them to form the habit of investigating carefully and of making clear, truthful statements, and to develop in them a taste for original investigation. The third purpose is the acquisition of knowledge. This, however, must be "gained by actual experience," and it must be "knowledge classified," or science.

For the attainment of these objects, interest, power, knowledge, *the children must study the plant;* no book should be used by them. The effort of the teacher should be so to interest and guide them, that they will learn how to work profitably.

The children should study the plant as a whole, not merely a part, as seeds, leaves, flowers; it is a mistake to limit the work to one part to the exclusion of the others, and it is as great a mistake to allow the children to study the parts without leading them to see the mutual relations and dependence of the parts.

The plant should be studied in its relations to its environment—light, air, water, soil, climate and other plants—and in its relations to the lower animals and to man. For the time being the plant is the centre of the world. The study furnishes many opportunities for coördinating science work with the other studies of the school, and at the same time for showing man's use of plants and his dependence on them.

As young children cannot generalize, it seems wise to limit the work during the first two years to the study of the germination, development, growth, and structure of three or four typical plants, like the bean, pea, and sunflower, studying, of course, only those features that are easily understood. Gradually more details may be studied, and other kinds of plants, flowering and flowerless, examined, causing the pupils' ideas to be more and more complete and generalized.

Whatever is being studied, the questions to be answered are: hat? Why? How?

First: What does it do, and what is it?

Second: Why does it do so, and why is it so?

Third: How does it do so, and how did it become so?

At first little can be done but answer the question "what"; adually "what" includes so many particulars that an answer "why" becomes possible; before the end of the course, "how" n and should be answered.

[From Report of the Conference on the Study of Natural History.]

Nature Study.

FIRST YEAR—FIRST HALF.

I.—COURSE OF STUDY.—Animals: Common domestic animals d birds. Recognize and name. Observe characteristics, features, bits, actions and other interesting facts. Anecdotes, fables, ngs, and games relating to animals. Plants: Flowers, fruits, getables, recognize and name. Observe form, color, qualities and es.

II.—AIM.—The aim of nature study is to inspire in the child a ve for nature, a habit of observation concerning the world about m, and to bring him into contact with certain objects in the plant d animal world.

III.—METHOD.—In this grade, the greater part of the nature udy must necessarily be oral. If the object itself is not obtainle, pictures of it are shown, and in a free talk, each child tells his n experience or observations. Later, the characteristic facts hich it is desired to impress about the subject studied are drawn om the children by apt questioning. Anecdotes are read to the ildren and appropriate songs and recitations are memorized by em.

Reading lessons are developed from the nature study and some the simple sentences are copied by the children. The manual aining is based upon the Nature Study, and indeed, the Nature udy is carried into all the lines of work, as far as it is possible.

IV.—OUTLINE.—The following is a condensed outline of the ture study for each month.

September.—The farm yard and its occupants: The hen, turkey, ck, horse, cow, etc. Golden-rod, aster, autumn fruits, apples, apes, plums.

October.—Distribution of seeds, milkweeds. Familiar birds, igration. Leaves, recognition of most common ones. Turning. lling. Acorns studied with oak leaves. Caterpillars. Collect coons.

November.—The squirrel. Nuts of various kinds. Grain, oats, heat, corn, rye; growth, reaping, preparation for use. Harvest, vegetables, fruits. The Indian, his home, habits, relation to us in history. The Pilgrims and their place in our history; by use of sand table, a few facts in geography are taught. Thanksgiving; some of the things for which we are thankful.

December.—The cat. The evergreens. Sky, sun, length of days; weather; moon, stars; snow. Christmas, love to the world; the races.

January.—New Year and what it brings. The dog. The rabbit, the aquarium, fishes. Development of a frog. The Eskimo and his land. Reindeer. Seal.

V.—RESULTS.—As every child is always interested in nature, this is one of the favorite studies of the course and its influence on the child in developing love for and kindness to the dumb world which surrounds him is invaluable.

Marian S. Purdie, Class Teacher, P. S. No. 10.

FIRST YEAR—SECOND HALF.

COURSE OF STUDY.—Animals: Common domestic animals and birds as in first term; characteristic parts, as fur, feet, ears, teeth; homes; care of young; relations to man. Lessons on kindness to animals.

Plants: Whole plant and essential parts. Observe growth from seed. Continue study as in first term. Parts of fruit.

Natural phenomena: The sun, day, night. Wind, rain, snow.

Note: Fables, anecdotes and poems relating to nature.

I.—AIM.—Nature work serves a two-fold purpose. Not only is the child taught to observe, to compare, to discriminate, but in his young heart is developed, that love for the beautiful, that appreciation of the handiwork of God, which will sweeten and broaden life, and lead to the formation of higher and nobler ideals.

When the child has reached the second half of the first year, he has formed an intimate acquaintance with the general appearance of a few common plants and animals. He is now ready to make a study of these in detail. If in the previous grade the proper interest has been aroused in the plant world, at this stage of the development, the child will be ready with innumerable questions, concerning the growth, the appearance and the uses of plants.

II.—SCOPE.—In the early fall, the visible signs of autumn were dealt with, viz.: the falling leaves, the ripening of fruits and grains, the changes in the weather and the characteristic flowers of the season. After this general introduction, the attention was turned to particular fruits. The apple, a fruit familiar to every child was the subject of an interesting lesson. The story of its life, from the blossom to the fruit, filled the children with enthusiasm, and made them anxious to know, if all fruits grow the same way.

The class was now prepared to take up nuts as a particular subject. Their varieties, special uses, etc., were pointed out and dwelt upon. This naturally was followed by a lesson on seeds.

The period of the year was now reached when a study of the bare tree is of advantage. The attention having been directed to a particular tree, interest in a common attraction, awakened unobservant eyes to a considerable extent, and a little ingenuity in the treatment of the subject, clothed bare facts in most interesting garments.

The migration of birds forms a fitting introduction to this branch of the nature work. Where it was possible, the bird was brought into the class room, and observations were made there and then. The hen, the duck, the goose and the turkey received due attention.

III.—METHOD.—In all the work, there has been a constant endeavor, first, to familiarize the child with the objects of nature nearest at hand, and second, to train the child, in habits of comparison and discrimination.

As the cold weather advanced, and the possibility of obtaining specimens grew less and less, the nature work now consisted in a study of the common domestic animals. Although several of these had done service as the subject of lessons in the first half of the first year, still the interest in them only grew as we studied more minutely the characteristic parts, and as we endeavored to understand the relations of these parts to the whole life of the animal. Considerable information, concerning animals, was gained by the children from the readers. By means of these lessons the less familiar animals were introduced. After some interest in them was aroused, it was possible, by the aid of charts and pictures, to develop a series of good lessons.

As the work progressed, the most important statements received from the children were placed upon the blackboard, and used as reading lessons. The work would be incomplete, were it not copied by the child. The writing was done upon unruled paper.

It was intended to have the number of objects attracting the child's attention reduced to a minimum. Concentrated attention and not scattered energies were aimed at. The thought of the lesson is of the greatest importance, and the reading and writing is but secondary. To require the child to exert every effort on the correct writing of the word and to ask him to strain every nerve in the formation of the letters, is to rob the lesson of its vivacity, defeat the purpose of its work, and reduce to dry formality a lesson once teeming with life and enthusiasm. During the writing of the lesson, the teacher walks through the aisles, noticing and correcting errors. Characteristic mistakes form the subject of special lessons.

Josephine Knakal, Class Teacher, P. S. No. 30.

FIRST YEAR—SECOND HALF.

The chief aim of nature lessons in the first year in school is to help the children to observe things created in the beautiful world around them, and to become familiar with the habits and characteristics of well known plants and animals.

The nature lessons are very largely language lessons too, and they furnish the subject matter for very many reading lessons. The morning talks are most frequently about things observed in the world around.

As far as possible all subjects are taken up in the appropriate season; in the fall the children gather leaves, ripe nuts, watch the squirrel gathering his winter stores, notice the empty nests in the bare trees and learn of the migration of birds. In the winter we have frost, snow, ice, and the evergreen trees. Spring and summer bring the bursting buds, return of the birds, planting of seeds, the plants and flowers.

All children before entering school know something of plants, trees, common animals, clouds, rain, etc. In school they are led to tell what they know and have seen, and are then by the aid of objects, pictures or drawings, led to new thoughts, and to observe new characteristics.

In the study of plants the whole plant itself or the important part to be studied, can be presented to the children, and when possible this is always done. With animals it is not so convenient, but good pictures, and when possible stuffed specimens serve the purpose here.

The natural phenomena with which we have to deal are all around us; the sun, moon, stars, rain, clouds, etc., and the children are stimulated to take notice of conditions and phenomena as they occur.

After the ideas have been developed by a study of the object itself, stories relating to the subject are read, and songs and poems are memorized, as

How the Leaves Come Down; The Squirrels' Arithmetic; Thanksgiving Day; The Snowflakes; Alice's Supper.

Mary A. Knox, Class Teacher, P. S. No. 68.

SECOND YEAR—FIRST HALF.

The aim of nature work is to train the senses, form good mental habits, familiarize the child with objects about him, and create a desire for more knowledge, while habits of observation, comparison, and discrimination are developed.

The subjects treated during the term were the horse, cow, sheep, goat, cat, dog, squirrel, chicken, and turkey. In the fall, different kinds of seed and their disposition were made the subjects of several lessons. Among others, the aster, goldenrod, oak, chestnut, and fir tree were taken up. Time was also given to the subject of grains. As to the natural phenomena, the sun, clouds, rain, snow, and ice, were studied.

By the time the children have reached the first half of the second year, they are prepared to continue more in detail the work of the previous grades. They are eager for information concerning the life of the animal and of the plant. With a little guidance, one will find the children capable of gathering information at first hand. In the animal world, the possession of pets and personal experiences in the country contribute abundant material for a series of lessons. The beautifully illustrated charts and numerous stories to be found in the children's books add interest and enthusiasm to the work.

The location of the school near the Park increases the possibility of obtaining specimens for plant lessons. These have a particular charm, when gathered by the children, and give evidence of the enthusiasm aroused in the pupils. Unbounded interest in the germination may be incited by allowing the children to plant seeds and watch the development from day to day. In all cases it has been possible to have specimens, models, or charts, and blackboard illustrations for vivifying details.

The inductive method was pursued: and frequently the devolopment proceeded by comparison. Although dealing with individual plants, it has been an endeavor to present the subjects in such a way that the fundamental principles of all plant growth may be understood.

The method of introduction varied with the subject. Sometimes a story, sometimes a few questions, again, a simple statement of the object of the lesson served to awaken the necessary attention. At different periods in the lesson, the statements obtained from the children were placed upon the board and formed a reading lesson. Later, this was copied with double ruled paper.

The nature and language work were strongly correlated; with each lesson there was often either a choice quotation or an appropriate story for the week. Our nature work furnished material for a large number of reading and writing lessons, and naturally afforded excellent drill in language work. Corrections were made on the spur of the moment, while pupils were copying the sentences from the board.

As for drawings, the specimens or blackboard sketches were used as models. Spacing was regulated by the use of inch splints.

Philippina Daum, Class Teacher, P. S. No. 30.

SECOND YEAR—FIRST HALF.

I.—Course in Nature Study.—Animals: Common domestic animals and birds as in previous grade, and insects. Observe covering, parts of body, kinds of food, nests, adaptation to mode of life, use to man. Plants: Common, wild and cultivated flowers, trees, grass and grains. Recognize and name. Observe bursting of buds, germination of seeds, place and manner of growth. Parts of the plant, uses of parts. Natural Phenomena: Continue work of first grade. Water: rain, snow, ice, fog, clouds; sky, rainbow. Observe changes in weather.

Note: Fables, anecdotes and poems relating to nature.

II.—AIM.—The aim of Nature Study is to cultivate observation, imagination and language, and to arouse interest in the beauties of the world.

III.—MATERIAL.—To attain this end, animals are studied from pictures and blackboard illustrations principally, as but few living specimens can be presented in school; plants, from living specimens with which we have been abundantly supplied; and natural phenomena from the weather principally.

IV.—METHOD.—After careful observation, children express the ideas gained during the lesson, and some of the best statements are written on the blackboard by the teacher and copied by the children.

Selections from Hiawatha have been read to the children and they have memorized, written and illustrated certain parts.

Lillie F. Thorne, Class Teacher, P. S. No. 75.

SECOND YEAR—SECOND HALF.

I.—COURSE IN NATURE STUDY.—Animals: Relations of domestic animals to wild animals; as cat, tiger; dog, wolf. Comparison of animals and distinguishing parts. Care of animals. Plants; continue to study the common, wild and cultivated flowers, trees, grass and grains. Observe bursting of buds, germination of seeds, place and manner of growth. Parts of plant, uses of parts. Dependence of plants upon soil, and moisture. Cultivation of plants. Collect and compare leaves. Study beauty of form, color, texture. Natural Phenomena: Observe changes in temperature. Changes of seasons. Effect of weather upon plants and animals. Earth Study: Rocks; stones, gravel, sand, clay, loam. Action of water on streets and soil.

II.—AIM.—In all of our teaching in Nature our aim has been to develop in the children a love and sympathetic interest in that subject. We encourage them to observe the common things, which are daily seen about them and to generalize from their observations Quotations by standard authors are given, and the children thus memorize some beautiful thought in connection with the subject.

III.—METHOD.—In September some plants and all kinds of seeds can easily be found therefore we commenced with that part of the Course of Study. A careful study of fruits and seed vessels was made. Agents that help the plant in dispersing its seeds were spoken of. Seeds that have wings and seeds that are provided with silky or feathery tufts of hairs, adapting them for wind dispersal were mentioned.

Germination of seeds; place and manner of growth, dependence of plants upon soil, sun, and moisture were carefully observed.

Children collected and compared leaves. They especially delighted in noticing the color and texture. The parts, venation, shape, margins, arrangement of leaves on stem, also uses of leaves were studied.

As the farmers had just finished harvesting their crops, we studied grains. In studying wheat and corn, the myth about Ceres and Proserpina was read and reproduced. After having taken up several of the cereals, the pumpkin was talked about. "The Pumpkin" by Whittier was memorized and written. The sweet gum, dogwood, maple and pine trees were observed and drawn.

Records of the weather were kept. Changes in temperature and seasons were observed.

The children read about and collected pictures of the winter haunts of animals and also noticed what effect the weather had upon animals and plants and how they adapted themselves to changes in climate.

The relation of domestic animals to wild animals such as cat, tiger; dog, wolf, etc., was studied. We made a comparison of the distinguishing parts of animals and the children were taught to care for and be kind to animals.

The action of water upon the streets and soil was spoken of. Specimens of stones and rocks, which had been worn away by the action of water, were shown. Rocks, stones, gravel, sand, clay and loam were collected and examined.

Elise M. Feuring, Class Teacher, P. S. 10.

SECOND YEAR—SECOND HALF.

The study of Nature gives to the child an added power of observation, judgment and imagination. If taught with a good heart and in the right spirit the children will be imbued with the desire to further their knowledge in this direction.

I take for subject matter lessons which cover the requirements of the grade. I do not altogether confine my work to just these, for often the children may bring specimens which deserve consideration.

In presenting a lesson questions are given in regard to the knowledge the children may possess of the subject. Finding out just the facts they know, I ask how they know that these things are so. This induces a train of thought. Their ideas, as to the reason of certain facts being so, are often quite accurate. They critically observe, weigh, and reason. I now add new facts. By this time they are full of interest. They become surprised that they knew so much of the subject yet not all. Often they are aroused to such zeal that I am obliged to keep on the alert to supply food for thought. This spirited study becomes very fascinating. My class and I are so enthused that we press forward for added information.

These lessons are mainly conversational. After gathering a number of facts the children give concise expressions, which are placed upon the blackboard. They read and copy these. If the subject is some object of Nature, brought to the room, the children make a drawing of it. They also illustrate any part of the object under consideration. The result is a group of illustrated facts. The children love to think that by providing material, they are instrumental in suggesting a lesson. They furnish specimens cheerfully. This also keeps the lessons seasonable.

The lessons are correlated with reading, number and indeed all the day's work. This seems to the little ones like a very amusing and instructive game. They will enter into the spirit of the method to such an extent that they themselves will suggest how I may use the subject in an appropriate manner. For example, one day the lesson was on the squirrel. We used the squirrel all through the day's work. It was used as a means of discipline also. We often deduce our lessons in morals from our subject. Thus the squirrel taught us to be quick, to have sharp, watchful eyes and to be provident. In giving out some work one child failed to hear at the first time. Another child said "We forgot to put in our game, sharp ears, too. The squirrel is quick to hear so we must be quick that way too." It takes away from the laborious part of the work to watch with what zeal they enter into the game of not being caught in any way lacking in these qualities.

Sometimes the subject laid down in the grade schedule is not obtainable as an object. Then I make use of an illustration. This gives training to the imagination not only in regard to the exact appearance of the object, but also the surroundings it has. The children will form pictures in their minds and so color their outlook.

Things assume a livelier interest after a time spent on this subject. Objects are not merely animals, trees, rivers, etc., but they give pleasure in regard to their beauty and usefulness. The child's mind begins to grasp the idea of ownership of all those things. He is a child and part of Nature, is surrounded by her, is dependent upon her for life, strength, food. Nature Study has a refining influence also.

Jennie L. Ross, Class Teacher, P. S. No. 5.

THIRD YEAR—FIRST HALF.

ANIMALS.—Study animals with a view to classification; as animals that eat flesh, that gnaw, that eat grass. Birds; as perchers, swimmers, birds of prey, etc. Observe development of animals; as moth from caterpillar; frog from tadpole. Relation to climate, as in migration of birds. Kindness to animals.

NATURAL PHENOMENA.—Continue work of previous grade. Cardinal points. Observe sunrise and sunset, length of days; length and direction of shadows. Direction of winds to storms, development of storms.

EARTH STUDY.—Continuation of work of second grade. Earth surface; plains, slopes, hills; drainage; surface water; rivers, ponds, lakes, shores and banks.

The purpose of the nature lessons in general is:—

First—To familiarize the children with all things beautiful in Nature and to inspire in them a love for every living creature, however small. Second—To train the children to observe closely and to cultivate their power of language by reporting what they have seen.

The course of lessons on animals was given with a view to classification; as animals that eat grass, that gnaw, that eat flesh, thick-skinned animals, insects, fishes and such birds as swimmers, perchers, climbers and waders.

The children were encouraged to observe and discover for themselves, the habits and characteristics of such members of each family as were familiar to them. The environment of the same, together with the adaptation of their parts to their lives and habits, were also considered.

The concept of the animals under discussion was gained from the study of living animals by visits to the Zoological Garden, and Parks of the City; also from mounted specimens, pictures and blackboard illustrations.

By a series of questions, the children were encouraged to talk freely and intelligently. The oral expression of thought was frequently accompanied by a written one with illustrations, for the purpose of further testing their powers of observation and the knowledge gained thereby.

In the study of insect life, the subjects handled were from the living and dead specimens. The development of frogs from tadpoles was studied from the living animals, kept in an aquarium in the class-room. The indoor observations of the different classes of birds was made from mounted birds and from dried specimens of birds' feet.

The characteristics of the gnawing animals were ascertained from a stuffed squirrel; and those of the thick-skinned from a small artificial elephant. The elephant was really a mechanical toy. It was so accurate in every detail and served its purpose so well, that I deemed it advisable to use it in connection with the thick-skinned animals.

Stories and fables were read to the children and many poems were learned by them in connection with this work.

Lessons in natural phenomena were introduced by actual observation; as the relation of winds to storms, length and direction of shadows; also the various forms of vapor as rain, hail, snow, sleet and ice.

As far as possible subjects were studied according to season. The work was correlated with reading, language, number, literature and drawing.

Grace Wiley, Class Teacher, P. S. No. 68.

THIRD YEAR—FIRST HALF.

In the beginning of the third year of school life, we aim to lead the child mind to comprehend more of the causes and effects of the things about it—the weather, the sunrise, sunset, length of days, shadows and their direction, wind, storms, etc. The theory put forth is illustrated by simple experiments.

Then individual animals are taken as types of particular classes; their adaptation to climate and season is considered; the development of animal life as, frog from tadpole, moths from cocoon is studied. Specimens are easily procured and development can be observed in the class room, talked over freely, illustrated and made the subject of compositions.

Stories, poems, fables, pictures, original drawings and compositions are taken up in correlation with the entire work covered.

The result sought by this study is first, to cultivate the sense of observation, to note the classification of objects, later to find reasons for these classifications, to think connectedly and logically, with clearness and accuracy, and lastly to create such a love of nature that will lead to further study without the aid of the teacher.

Hildegarde Rabing, Class Teacher, P. S. No. 135.

THIRD YEAR—SECOND HALF.

Course in Nature Study.—Plants: Methods and conditions of planting and harvesting. Relation of plants to climate. Vegetables, fruit, grain, in relation to the seasons, uses and values. Recognize trees by fruits and leaves. Parts of flower. Collection and mounting of specimens. Natural Phenomena: Continue observations each month as in previous grade. Keep weather records. Study effects of heat and cold on water, and on plants, animals, and man. Adaptation to climate. Earth Study: Continuation of work of previous grade. Cultivation of soil, relation to plants. Relation of surface to plant growth. Study of topography and rocks of New York. The earth as a globe; land masses, natural divisions of land; natural divisions of water.

General Outline of Lessons.—September.—Golden rods, asters, turning leaves. October.—Recognize leaves of trees. Special fruits, their distribution. Distribution of fruits in general. November.—Trees, preparation for winter. Change in weather, cold. Effect of cold on plants. Effect of cold on animals, man. Thanksgiving. December.—Land and water divisions. Study terarium, to notice effect of cold on small land animals. Holly, mistletoe. January.—Cocoons (made by caterpillar as protection against cold). Evergreens. Birds' nests (left by birds driven South by cold). Ice, snow. (Effect of cold on water).

The aim of Nature Study is to bring children in touch with nature, and so broaden their sympathies and outlook; to teach them to observe carefully ; to express what they see ; to draw conclusions from their observations.

Nature Study proper is the observing and telling. As soon as it is written it becomes composition, dictation, etc., but this follows the aim of the Course of Study which is to make studies correlate as far as practicable.

The three divisions of Nature Study are obviously related as, "Methods and conditions of planting and harvesting," naturally involves "Cultivation of soil, relation to plants," and "Adaptation to climate."

The rocks of New York studied are specimens brought in by the children. They learn to recognize granite, gneiss, mica, limestone and sandstone (using acid test to distinguish the two latter).

From talks about Manhattan Island and the lakes in Central Park the idea of islands and lakes in general is developed ; other divisions are taught by comparison with these.

In connection with Nature Study selections, from standard authors, are read and quotations memorized.

In all lessons when possible specimens were used. In case of evergreens each child had a twig. Evergreens were the subject of oral lessons during the week. The composition was first written on brown paper, corrected and rewritten on white paper.

METHOD OF CORRECTION.—While children were writing, the teacher walked around helping and correcting individually. When the compositions were finished several were read aloud by the children, others in class correcting orally, and also correcting similar errors on their own papers. The papers were collected and the teacher corrected one quarter of them. When the compositions were rewritten the teacher again corrected individually, so that all of the papers were corrected, either by the children themselves or by the teacher.

Marianna Shutes, Class Teacher, P. S. No. 10.

THIRD YEAR—SECOND HALF.

The purpose of nature study is to train the child mind to observe closely and accurately and to arouse the spirit of investigation.

To gain insight into nature, children should be taught to look beneath the surface, to uncover facts, to detect the working forces or hidden laws.

A very simple method of study is to note the development in the sprouting of seeds, as beans, peas, etc., observing the daily progress of the same; the bursting of the seed, the putting out of roots, the opening of the leaves, etc.

These facts are further impressed on the child mind by the drawing of the plant in its different stages of development, by writing of what they have observed, or by the reading or memorizing of extracts, poems or stories in correlation.

The development of trees and their fruits is taken up in a similar manner. The action of the climate, changes of seasons, rain sunshine, wind, snow, frost upon fruits and grains are noted.

With the change of seasons, the effect on animal life is also to be observed; the flight of birds, winter stores, fur coverings, winter homes, relations of animals to climate, their adaptability for procuring their own food, etc.

In earth study attention is directed to rocks, the formation of land, slopes, river banks, etc., the preparing of the soil, decaying of leaves, forming of loam, etc.

The result obtained by this training of observation of things in nature and their relation in everyday life is the awakening of a desire for more knowledge, the creating of that love of nature and that keen insight into its laws which is the foundation of all knowledge.

Amanda Waris, Class Teacher, P. S. No. 135.

FOURTH YEAR- FIRST HALF.

The prescribed Course of Study is the following: (*a*) A brief resumé of the study of the sun as pursued in the previous grade. (*b*) The sun in relation to climate. (*c*) Its action on water and air. (*d*) Its effect on human life, animals and plants. (*e*) Zones of heat and cold. (*f*) Seasons. (*g*) Water—changes of form—rain and snow. (*h*) Action of water on surface. (*i*) Action of the ocean on coasts. (*j*) Common rocks and minerals. (*k*) Common metals—uses and values.

METHODS.

The study of Natural Phenomena necessitates close and accurate observation on the part of the child. The teacher must pursue logical and inductive methods. The following are some of the methods which I pursue in this work—(*a*) By the observation of Nature, on the part of the pupils while out of doors. (*b*) Experiments in the class-room. (*c*) The study of live specimens in the school room. (*d*) Visits to parks and museums to study the animals and plants of the various zones. (*e*) Collections of minera

›ecimens are made by the children. (*f*) Drawings of the various ages in Natural Phenomena are executed by the pupils. In this ıy, their experience in Manual Training is utilized. (*g*) By the ady of pictures and good illustrations. (*h*) By oral and written counts of the objects and phenomena studied, thus correlating nguage.

General Remarks.

The Elementary Science in this grade is of such a character at it is practically almost inseparable from Geography. This ady, from its ethical side, includes and interweaves the World istory of this grade, which includes Classic Myths relating to rth, sun, water, air and fire. The child loves to read these and we us lead him on to a taste for literature.

Not too much stress can be laid upon the importance of the ady of pictures. Through what source do we obtain our most vid ideas of the Arctic regions, its seas and climate, from written ɔrds or from pictures? We think of the cold as we recall pictures frozen seas, Eskimos, etc.

Results.

The child becomes interested in his surroundings, he studies ıe sun above, the air about him, the stones in the roadside, and the ›arby water—all contain a new meaning for him. He acquires ıthusiasm; his imagination is quickened; he obtains well ordered ıowledge; he forms definite habits of investigation, of recording cts, and good power of expression. While studying the climate ıanges, the distribution of plant and animal life, he naturally akes comparisons and soon realizes the advantages which he ›ssesses in living in the Temperate Zone, above all, in being a resi›nt of the United States, that noble "Land of the Free."

Helen E. Donlon, Class Teacher, P. S. No. 156.

FOURTH YEAR—SECOND HALF.

Course of Study.—Plants in relation to soil and agriculture. ultivation of plants for food—vegetables, fruits. Fruit trees, fruit ırubs, fruit vines. Distribution of plant life on earth. Areas of ıltivation. Areas of staple products. Wild and cultivated flowers New York and vicinity.

The teacher selects such plant forms as she may find convenient ıd appropriate to the season of the year. Therefore it is wise to ıvide the botany course into separate plans; a spring and fall an. Each month offers material. Every child should be proded with a specimen.

In September, the plant may be discussed; the parts, the ınctions of the parts and the use of plants to the world. During ıis month, owing to its variety of fruit, we may study the different classes; fleshy, stone and dry. It is well to make a collection of seeds, as they too, are now ripe. The fields offer specimens of milkweed, thistles, corn, wild aster and the beautiful goldenrod, our national flower.

These, with their correlated literature are full of interest. Notice also the gorgeous coloring of the leaves; let the children collect and mount specimens and study their shapes.

In October we notice the fall of the leaf, the scattering of the seeds and the agents by which these seeds are scattered; what has become of them and how they differ. A special study of nuts and fleshy fruits may be given, keeping in mind the fact that the food value of these seed houses is the attraction which nature holds out to man and animals, in order to have seeds cared for and distributed. Autumn is the store house into which all other seasons bring their treasures. Therefore consider the fruits which are now ripe on our trees, shrubs and vines.

November. In preparation of the day's lesson the children come provided with roots. In our talk, we consider the kinds of roots, how they grow and their functions. The observation lesson is followed by a drawing lesson upon the subject studied. Each child is required to reproduce with his pencil or brush just what he sees. Talks on tea, wheat, cotton, and cork furnish excellent material for composition. In November we study the essential parts of plants, the uses and functions of the root, stem, leaf, flower, fruit and seed. We teach the children that plants are divided according to the duration of their lives into three classes, viz. herbs, shrubs and trees. The children become acquainted with the different trees; they observe their general forms, which depend largely on the branching; examples, the willow, the poplar, the larch etc. Notice the bark and the leaves which the children have pressed and mounted. We owe our health to trees; they fertilize the land, moderate the climate, give shade in summer and at all times make beautiful the landscape. The end of November brings Thanksgiving and pumpkin pie. The gourd family is now talked over, and the golden pumpkin suggests Whittier's beautiful poem, which may be correlated at the same time with history.

December. Winter is the time to study the buds and all the life which is wrapped up, and asleep under the covering of each tiny leaf-bud. While nature is seemingly asleep we may study what the sap is doing in the meantime. In the sap there is a sugar, starch, medicine, gum, color and perfume; we also talk about the circulation of sap.

This may be followed by a lesson on the sugar cane, which may be reproduced by the class, in the form of a composition. The children's attention is called to the beauty of nature in winter; the winter aspect of common trees, and the sleep and death of the plants.

The week before Christmas may be devoted to the study of the evergreen family, particularly the fir tree with its pleasant associations. Geography may be correlated in connection with the distribution of plant life on the earth, and the areas of production etc.

The following list suggests poems to be read or committed to memory in connection with this study: The Corn Song, Song of Harvest, The Huskers, Snow Bound and The Pumpkin, all by Whittier, America's nature poet.

The lessons of the botany course are of an oral nature with blackboard outlines, which the children copy in their note books. These notes serve as material for home work, also as a guidance for their compositions, which are corrected and criticised by the teacher.

Once a week a dictation is given on the subject for that week. The children punctuate as they write; after the completion of the lesson the dictation is placed on the blackboard, attention is called to the spelling, pauses and other important points, and the children make their own corrections. The lesson is then erased from the blackboard and the class rewrites it as a final copy.

Johanna F. Vogel, Class Teacher, P. S. No. 30.

FOURTH YEAR—SECOND HALF.

METHOD.—Of the five divisions of the Course of Study in Science, it would seem that wild flowers should receive the first attention, as they are to be procured only early in the school term. Four weeks were devoted to this particular branch. Pupils were requested to bring some specimens, until the fields and waysides had been robbed of every variety.

In each lesson, the names of the plants in question, family, root, stem, leaves, flower, fruit, where found, the time of blooming, etc., were discussed. Many of the flowers were pressed and mounted by the pupils. These lessons afforded opportunities for review of what had been taught in previous grades, concerning plants. Short quotations referring to the wild flowers, or flowers in general, were memorized.

After the most available wild flowers had disappeared, the "cultivated flowers" in bloom at the time, were studied for two weeks, following the same method as that pursued with wild flowers.

Some of the simple, cultivated flowers were selected for plant analysis; having dissected a flower, the various parts were pressed, mounted and labelled and their functions taught.

Whenever convenient, the scholars were given individual specimens. Many took them home, planted them, and in some cases, after sufficient time had elapsed, brought the growing plants to school.

As the Thanksgiving season approached, the pupils' attention was directed to the "Cultivation of plants for food," and "Plants in relation to soil and agriculture." The grasses claimed first attention; and were followed by other food plants, in the order of their importance: the climate, soil, planting, care, and harvesting, and the various processes through which they pass, before being ready for use, received consideration.

The "Distribution of plant life on the earth," is shown by means of diagrams, illustrating the earth, its divisions into zones, the continents, and the plant life peculiar to each, the areas of cultivations and of staple products.

The last two weeks are devoted to a review of the term's work, as illustrated.

Result—From the interest and enthusiasm manifested in this work by the class, it is evident that they have realized to a great extent, the meaning of the words,

"Of all things beautiful and bright,
In this rich world of ours,
God gives us naught for our delight,
More lovely than the flowers."

Eliza M. Hatch, Class Teacher, P. S. No. 101.

FIFTH YEAR—FIRST HALF.

I.—Aim—It is Spencer I believe, who says that the best equipment for one's career in life is to be a good animal. In sympathy with the above expressed sentiment, the result we have striven to obtain in our work in physiology has been, to leave firmly rooted in the minds of the children the idea that the human body is a most wonderful piece of Divine mechanism, over which we are given the control; that there are certain inflexible laws of health, for the violation of which we are called to account and compelled, sooner or later, to pay the penalty by personal suffering.

Many are the arguments which might be cited in favor of the possession and the retention of a sound body, and what that usually develops a sound mental and moral nature. Not only are the chances of our success in life increased a hundred fold by good health, but, freedom from bodily pain greatly enhances our opportunities for happiness and that of our friends, by our cheerfulness and optimistic views of life. It is an old saw which lays by the door of the dyspeptic, the blame for most of the grumbling, discontent and pessimism of the world.

Thus as our grade work calls for instruction in reference to the bony and muscular system of the body, circulation, digestion and the evil effects of alcohol and tobacco on the system, special ttention has been given to general hygiene in connection with hese branches, rather than to a very detailed study of human iology.

Keeping in mind that, "good health is one of the safeguards ot only against suffering but against crime" we strive to hold up he standard under which so many of the best educators of the day ave taken their stand—that of the equal development of body, nind and soul.

II.—METHOD.—The text-book at our disposal, "Our Wonderul Body" is used by the children as a supplementary reader. The essons are given orally by the teacher. Reviews are held at the nd of each, in which children are called upon to answer, orally or n writing, questions framed to test their intelligent understanding nd comprehension of what has been taught. Of the four or five egular compositions required monthly, one is written upon that opic in physiology, then under consideration.

The work is correlated as much as possible with drawing, for onsidering the matter from a psychological standpoint, both xperience and the wisest of our pedagogues tells us, of the greatest lepth and permanency of impressions reaching the mind through he medium of more than one sense. In the case of correlation with rawing, the senses of both hearing and sight and also the muscular ense are active.

Whenever possible, simple experimental work at home is equired of the children, such as burning bones to show composiion and structure, examination of the movements of muscles in the egs of poultry, the study of the eyes of pigs, fish or any others that an be easily procured.

III.—OUTLINE OF GRADE WORK.—The Bony System. 1. Bones—their principal uses; adaptation for such uses; shapes; tructure; composition; size; joints; ligaments. 2. Need of corect position at all times; proper food and sleep—their necessity or growth.

THE MUSCULAR SYSTEM.—1.—Muscles—kinds, shapes, strucure; expansion and contraction; modes of fastening to bones; tendons. 2. Normal and abnormal development; exercise—how nd when to be taken; difference between exercise and over exertion.

DIGESTION.—1.—The digestive tract; functions of each part; fluids of digestion; special organs of digestion—their structure, size, shape, position, method of working. 2. Foods—classification, kinds; preparation of; regularity of meals; temperance in diet; slow eating; thorough mastication; Indigestion—what it is, causes, cures; effect of tobacco on saliva, hence on digestion; time of exercise in relation to digestion.

CIRCULATION.—1.—The blood—its composition; purification—how latter is accomplished; organs used in circulation; their position, shape, size, structure. 2. Ventilation—exercise in the open air; hygienic clothing—unrestricted, weight from shoulders; improper or sluggish circulation; cause and effect.

ALCOHOL AND NARCOTICS.—1.—Alcohol—how obtained from grain, etc., fermentation; effect of alcohol on the principal organs of the body—as a stimulant and after effect; diseased craving. 2. Tobacco—effect on nerves, heart and digestion; stunted growth; the uncleanliness of the tobacco habit—road to consumption.

Josephine M. Chudoba, Class Teacher, P. S. No. 154.

FIFTH YEAR—SECOND HALF.

COURSE OF STUDY: Distribution of animal life on the globe. Typical animals of land and sea. Adaptation of the animal to his environment; food, enemies, mode of life, habits. Classification of quadrupeds, of birds. Articulates, Fishes, Radiates, Reptiles, Mollusks.

In following the Course of Study, the teacher began with the simplest of "Life's Children," and by tracing the development of the single-celled animal through its various changes, reached the higher animals.

The classification of the animal kingdom was made as the class proceeded. In teaching amoeba, hydra, and sponge, the very simple construction being shown to the pupils, these animals were grouped as protozoa, first life. The radiates, showing resemblance in arrangement of organs, were taken as the second group. The mollusks were then studied, and lastly, the articulates. This completed the work in the sub-kingdom, invertebrates.

The vertebrates were studied in the following order: reptiles, fishes, birds, and mammals. In the study of mammals, the bat, whale, and elephant were selected to show that the home and mode of locomotion do not determine the order of animals.

AIM.—The teacher's aim has been not to teach scientific facts, but rather, to teach how to acquire them through habits of close observation. By endeavoring to present the subject in an enthusiastic manner, she has hoped to inspire in the children a desire to study Nature, an appreciation of the beautiful world in which we live, and chiefly, a love for the Creator, who watches over the least of His creatures so tenderly.

METHOD.—The method pursued has been to trace carefully the changes which animals undergo, and to lead from the lower class to the next higher, endeavoring not to leave any gaps between the groups. The work has been apperceptive so far as possible, exercising first, the senses, next, the conceptive faculty, and the reasoning faculty, last.

Whenever available, the living animal has been studied. An aquarium, containing goldfish, sunfish, silverfish, tadpoles, and snails, was kept in the class-room. The work in fishes, quadrupeds, and birds, was further supplemented by visits to the City Aquarium, Zoological Gardens, and Aviaries. In lessons on mullusks and articulates, living animals and shells were examined in class. In the reptile lesson, only lizards and turtles could be procured. In all the work, pictures, diagrams, and miniature animals, made of papier maché were studied.

The children have been required to illustrate the majority of the lesson by drawings, both as a help to the study of animals and as a test of the pupils' powers of observation. The animal study has also been correlated with the work in Geography, in Composition, and in Literature. Poems on animals, by famous authors, have been read, and many have been memorized.

By changing the manner of reproducing lessons, the element of variety has been introduced into the work. Some lessons have taken the form of composition, some are drawings illustrating the life of an animal, others are systematized reports of class lessons. In the lesson on the distribution of animals, a map of altitudes has been given. The genealogical tree has been used to show connection of different animal forms. In the lesson on the elephant, the question and answer form of recitation was employed.

The lives of the great naturalists have been constantly referred to, in order that the children might gain an idea of the amount of time and labor spent on scientific investigations. Effort has been made to help them to realize and appreciate the fact that they are living in an age which has been enlightened by the work of great thinkers.

Mary Walseman, *Class Teacher*, *P. S. No.* 68.

FIFTH YEAR—SECOND HALF.

Course of Study and Analysis.—To carry out the spirit of the course of study, the pupils are encouraged to talk about and illustrate the distribution of animal life on the globe, with reference to the zone or belt of climate best adapted to the life of each particular species. The pupils do this by drawings representing the zones with the animal life thereon, or by pictures of animals mounted upon the globe in the latitudes to which they belong.

The adaptation of the animal to his environment is impressed upon the minds of the pupils by stories and illustrations, and by a careful study of climatic requirements. The classification of quadrupeds and birds, including a brief history of animals now extinct, forms an interesting and practical branch of the course of study.

Materials and Means.—Throughout the study of Zoology, the teacher and pupils use all available means for personal research. Books with attractive illustrations are liberally provided by the School Board; charts of natural history and pictures culled from various sources are freely used, and the stuffed birds from the school collection take the place of the living specimens.

METHOD.—It is the invariable practice to tell the children nothing which they can observe for themselves, and to this end, they visit the Museum of Natural History, or the Public Aquarium, under the guidance of the teacher. Small, well-stocked aquaria are kept in the school by means of which the pupils may watch the development of animal life from stage to stage.

RESULTS.—It is believed that the intelligent study of this subject will serve to awaken powers of observation, to attune the ear to the song of the bird, to rob familiar animal life of its terrors, to bring man into closer fellowship with all animate nature, and at the same time to lay the foundation for a deeper and more comprehensive study of the works of God's creation.

Isabelle M. Monroe, Class Teacher P. S. No. 50.

SIXTH YEAR—FIRST HALF.

I.—SCOPE.—The subject of physiology for the sixth year is in part a review of what has been done the two previous terms; the bony, muscular and digestive systems, and circulation, to which has been added the respiratory system and the skin, also the study of the effect of alcohol and narcotics upon the system, and a practical knowledge of the laws of health.

As an introduction to the work the children were recommended to read "The Man Wonderful in The House Beautiful."

We began with a study of the body as a whole, comparing it to a house, a steam engine and a factory, where the organs are the machines that do the work. This was followed by a study of the structure and functions of the various organs in their natural relations and a classification of the same into systems, viz:—a bony frame-work or skeleton, a muscular system or motor apparatus, attached to the frame, the brain and nervous system, a directing apparatus, the skin, a general envelope, serving also the purpose of drainage, the digestive and assimilative organs, an apparatus to prepare and supply new material, the blood-vessels, a circulatory apparatus to carry away old material and to distribute new; the respiratory system, an aerating apparatus to purify, warm, and enliven the circulating fluid.

II.—METHOD. The subject was studied objectively as far as possible. Practical experiments were performed by the teacher and pupils. For illustrations, we used the human skull, the manikin charts, diagrams and blackboard exercises. The attention of the pupils was called to their own bodies in illustrating the joints, the pulse, the veins, arteries and respiration. Use was made of the lungs and wind-pipe of the sheep, the heart and part of the great tubes leading to and from it, portions of the limbs, showing the

lation of muscles, tendons, ligaments and joints. Pupils were
ained to make and to copy sketches and diagrams in their note-
oks.

The plan was to announce each subject one week in advance.
is aroused much interest, the dullest pupils often contributing
cts and specimens. A lesson was taken up in the form of a con-
rsation. The facts developed were summarised and reviewed from
topical outline placed on the blackboard. This lesson was then
ritten up at home by each child. At the next lesson, the com-
sitions were read and corrections made by the class. All were
en neatly copied in note-books and illustrated by appropriate
etches. Further drill was had by correlating such subjects as
ading, spelling, composition, drawing and manual work in prac-
al experiments.

III.—Result.—Thus the pupils were taught to search for and
ove for themselves the great truths of nature. Such a study of
y natural science cannot help but broaden their minds and make
em close and accurate observers. It trains them as well in the
ility to express themselves or state what they have discovered.

Rachel Pitcairn, Class Teacher, P. S. No. 41.

SIXTH YEAR—FIRST HALF.

Course of Study.—Physiology and Hygiene; Review of pre-
ous grade; Respiratory System; The Skin: Alcohol and Nar-
tics.

The Ultimate Aim of the Study.—1. To raise the child's
oral standard in order that he may become a more nearly perfect
oral being. 2. To prevent the use of stimulants by teaching the
ect upon the human system. 3. To give the child a correct and
ientific knowledge of the subject. 4. To make a lasting impres-
on ; this to be done by means of object lesson and allegory. 5. To
ve the child become so conversant with the subject that it will
nd to better the hygienic conditions of home.

The Immediate Aim of the Study.—To develop interest in
d to give knowledge of the subjects of the grade.

Methods Employed.—The subject was presented as an allegory
mparing the human body to a house. Charts, black-board draw-
gs, pictures, experiments, readings, and other aids were made use
whenever appropriate.

Emily Newton, Class Teacher, P. S. No. 78.

SIXTH YEAR—SECOND HALF.

The course of study includes physical geography and nature
udy covering common minerals and broad topics in geology.

My plan has been to correlate physical geography, geology and
ineralogy as three branches of the one subject Earth-study. The

work presented has aimed at a sequence in this correlated work. We started with the statement of our aim in taking up this Earth-study; namely, to discover how the earth was prepared to become the home of man.

The children's attention was first drawn to the familiar object, the common pebble. In the observation lessons, each child held a specimen of a mineral, which, in order to discover various facts in regard to it, was carefully observed, under the guidance of the teacher. This called into play the child's self-activity, aroused deep interest, and compelled her to apply old knowledge to gain new. When all the facts were noted, they were sorted and arranged and the child wrote out the result of her observations.

New knowledge on the subject was now presented by the teacher, after which a fuller description of the mineral was given by the child. This formed the second lesson.

In the third lesson, the child was called upon to recapitulate, gathering the many points into a topical lesson, arranged in order of the tests applied. This series of three lessons on one subject formed a type, guiding the child by apperception in the study of other minerals.

When the common minerals, peculiar to this locality, had become familiar, the study of the rocks which they form was next taken up. This was followed by the field lessons to teach the stratification of rocks and the dipping, folding, wrinkling, outcropping and faults of the strata. These were illustrated by diagrams. Next came the subject of the agents of disturbance and alteration in the earth's crust, as volcanoes and glaciers, erosion and weathering.

The results of these changes were next considered under such topics as new, middle-aged and old lands, plateaus, mountain ranges, river basins, valleys, divides, watersheds, drainage, plains high and low, alluvial and coastal, and coast outlines.

Soil was next studied as having resulted from the decay of rocks from various causes. The study of limestone then introduced the beginning of life in the world as seen in fossils; and the study of caves led to the consideration of the life of primitive man. Building stones with the part they have played in the civilization of man, and metals, which take highest rank in usefulness and value to civilized man, were next presented.

The term's work closed with the further field study of the geological features of the school locality, and with visits to the Museum of Natural History, for the study of particular minerals and of relics.

In the subjects taught, the ideas of beauty and grandeur, as well as usefulness, have been dwelt upon and supplemented with appropriate thoughts from literature.

Mary R. Young, Class Teacher, P. S. No. 68.

SEVENTH YEAR—FIRST HALF.

The work to be done in the first half of the seventh year in e study of physiology and hygiene includes the following:

I. OUTLINE—Digestion. Stomach Digestion; Intestinal Diges- n; Effects of Alcohol; Tobacco and Narcotics; Hygiene of igestion Circulation and Respiration. Movement of the Blood; reathing; Alcohol and Tobacco in the Lungs; Hygiene of Respir ion. The Nervous System. Distribution of Nerves; Nerve atter; Nerve Centers. Nervous Action. Work of Nervous ystem; Carrying Messages; General Work of Centers; Work of pecial Senses. Use and Abuse of the Nerves. Hygiene of the erves. Special Senses. Touch; Taste; Smell; Hearing; Seeing. ffects of Alcohol and Tobacco. Hygiene of Special Senses.

II. METHOD.—In presenting this subject each lesson began ith a preliminary talk about the subject to be taken up. Then harts, both plain and sectional, blackboard drawings by the eacher and the pupils, and in some cases the object itself, were mployed to interest and to make clear to the pupils' minds the arts of the subject that were of most importance and that were ecessary to be remembered.

The pupils were encouraged to consult books of reference on e subject, to bring in specimens, clippings from periodicals and ctures pertaining to the subject at hand. Collateral reading was o taken up to give a broader and more useful knowledge of the bject.

The pupils' attention was constantly drawn to their own bodies make practical the knowledge derived from the lesson.

Drills in the way of outlines and compositions were taken to fix important points in the pupils' minds.

III. AIM.—The results aimed at a knowledge of the important ans in the human body, the work that each one has to do, and v each individual can by following certain rules help these ans to do their work properly and thus preserve health. And the stress laid upon the dangers arising from the use of alcohol, acco and narcotics, a timely safeguard is established in the dren's minds, which will protect them against the pernicious cts of evil example and of evil habits.

Joanna Stafford, Class Teacher, P. S. No. 53.

SEVENTH YEAR—FIRST HALF.

The work in Elementary Science comprises a review of diges- , which includes, necessarily, descriptions of the organs of stion, the special work of each, the process of absorption, and a for the purpose of deciding which are the most nutritious s. A review of circulation, which requires a study of the d, heart, arteries, veins and capillaries; the course pursued by this vital fluid in complete circulation, and the health of the organs.

The advance work is begun by teaching the process of respiration; this leads to the important topic of ventilation. Then the step which naturally follows is the study of the marvelous guide of all the physical machinery, that which maintains harmony throughout our organism—the nervous system; for this work, careful attention is given to the brain, spinal cord, and nerves. We proceed to the consideration of the five senses; instruction on the organ of sense is, of course, included. The detrimental effect of alcohol and narcotics upon the human system is explained and illustrated by charts. Every lesson is introduced by question, illustration, or rapid review, the object being to avoid abruptness and to arouse the interest and attention of the children.

By proceeding from the known to the unknown, the facts are, so far as is practicable, developed, and so, by apperception, fixed in the pupil's realm of thought. The instruction is both synthetic and analytic.

The lessons are illustrated by blackboard sketches, which the pupils are led to copy, so that drawing is correlated with physiology, and sometimes facts in botany are recalled. Whenever possible, actual objects are used in the class room; for instance, an animal's heart is used in the lesson on the human heart.

As these are oral lessons, the pupils are led to converse as much as possible after explanations have been made, for perspicuity of expression follows clearness of thought, and thus the tutor is enabled to ascertain one result of the instruction.

After the new matter has been taught, a rapid drill follows, in order to impress the latest acquired knowledge upon the pupil's mind, and to arrange it in proper form.

The purposes of the instruction in physiology are, to cultivate esteem for the wonderful perfection shown by nature in the construction of the various parts of the human body, to impart to the child knowledge which will enable him to care properly for the organs, to preserve health, to increase his power for usefulness in the world, and to prolong life itself; also to cultivate memory, thought, language, judgment, and reasoning.

Each written exercise represents a review, and is arranged systematically, the topics having been written upon the blackboard. A course in physiology and hygiene is also pursued as supplementary reading.

Frances J. Cronan, Class Teacher, P. S. No. 93.

SEVENTH YEAR—SECOND HALF.

The course of study in Physics as laid down in the Manual comprises the following divisions: 1. Matter, 2. Forces, 3. Gravity,

4. Simple Machines, 5. Heat, 6. Sound, 7. Light. The Manual prescribes a minimum of thirty minutes per week to be devoted to this subject, but in the discretion of the Principal a longer time may be given. In the following analysis it is assumed that sixty minutes may be given per week.

As there are abouttwenty weeks in a term, the study of Physics for this grade may be outlined as follows: Matter (1). Division of (Mass, Molecule, Atom), Properties (General, Specific), Fundamental Units. (2). Conditions (Solid, Liquid, Gas), Changes—Physical, Chemical, Crystalline, Amorphous. Forces (3). Molecular attraction, Capillary attraction, Cohesion; Adhesion; Motion; Momentum. (4). Newton's First Law, Newton's Second Law, Composition of Forces, Newton's Third Law. (5). Mechanics of Liquids, Transmission of Pressure, Pascal's Law, Hydraulic Pressure. (6). Mechanics of Gases, Atmospheric Pressure (Air-Pump), The Barometer, Pumps—Lift, Force. The Siphon. Gravity (7). Weight, Mass, Density, Center of Gravity, Line of Direction, Equilibrim, The Pendulum. (8). Principle of Archimedes, Specific Gravity (Solids, Liquids, Gases), Methods of determining by Balance. Hydrometer, etc. Simple Machines (9). The Lever, Weight, Power, Fulcrum, Three Classes, Relation between P. and W., Applications. (10). The Pulley, Fixed, Movable, Single, Multiple, Relation between P. and W., Applications. The Wheel and Axle, Relation between P. and W., Applications. (11). The Inclined Plane, Relation between P. and W., Applications. The Screw, Relation between P. and W., Applications. The Wedge, Relation between ,P. and W., Applications. Heat (12). Sources, Effects, The Thermometer (Fah., Cent., Ream.) Conversion of one scale to another. (13). Transmission, Conduction, Conviction, Radiation, Evaporation, Ebullition. (14). Distillation, Latent Heat, Specific Heat, The Steam Engine. Sound (15). Production, Transmission, Range of audibility, Velocity in different Media, Reflection; Echoes. (16). Intensity—law of, Pitch—conditions of, Resonance Interference. (17). Musical Tones and Instruments, The Scale, Relations of Tones of Scales, Nodes; Ventral Segments, Overtones (Harmonies). Light (18). Sources, Propagation, Shadows, Intensity—law of. (19). Reflection—law of, Diffusion, Absorption, Mirrors (Plane, Concave, Convex), Images (Real, Virtual), Multiple, Reflection. (20). Refraction—law of, Total Reflection, Prisms—The Spectrum, Lenses—Optical Instruments.

The aim of the course is to interest the pupil in physical science, to create and foster scientific habits of thought, and to stimulate a desire for scientific knowledge.

The course, as outlined above, is carried on, as far as possible, inductively by experiment, blackboard illustrations, problems, and questions. A text-book is used by the pupil only for reference.

The experiments leading to the establishment and enunciation of important truths are performed by the teacher before the class. The pupils are required to take notes, make illustrations of apparatus, and record their observations. The inferences are then drawn out by careful questioning, and the principles and laws discovered are accurately noted. Numerous simple experiments are suggested to the pupils to be performed at home. The results of these experiments are also recorded by the pupils and then discussed before the class. Practical applications of the laws demonstrated experimentally are constantly suggested and referred to by both teacher and pupils, and problems are frequently assigned to the class to test their thorough comprehension of the principles investigated. Occasionally, pupils are required to perform experiments in the class-room, but as there is no regularly equipped laboratory at their disposal, these experiments are necessarily very limited in scope. Compositions on given topics are frequently written by the pupils, and each one is expected to treat his topic, as far as possible, from his own experience and observation as recorded in his note book. These compositions are illustrated by diagrams or pictures in elucidation of the text. They form the correlating element between the science and the language work.

Nearly all of the work in Physics in this grade is qualitative, it being intended as a training preliminary to the quantitative laboratory work of the High School.

The results obtained by the method above outlined have been very gratifying. The pupils have taken an intense interest in the work, and frequently carry their investigations much beyond the limits of elementary science. Some have constructed elaborate apparatus of their own devising, showing originality and independence, in thought and research. The note book is considered a very valuable adjunct to the proper study of this science, even in its elementary stages. If the pupils are trained to record accurately, neatly, systematically, and in good English the observations and inferences they make, they are thus early habituated to a careful, analytical mode of doing, thinking, and reasoning, to secure which must always be the object of intellectual training.

Hugo Neuman, Class Teacher, P. S. No. 10.

Geography.

INTRODUCTION.

BEFORE Comenius, instruction in geography is very little mentioned in the course of study. In his writings only, we find for the first time, definite suggestions as to what material to select for a course of study in geography and how to arrange the course. Further, Comenius was the first to advise us to make the knowledge of local geography and simple observations the basis of the study of our country and of our planet as a whole.

Rousseau expressed views similar to Comenius about the teaching of this subject and strongly denounced the fact that map drawing was substituted for direct observations of the child's environment. Rousseau said, "Let the child see the rivulet, the little lake or pond, the little hill and meadow, and then let these products of observation be developed, by the help of the imagination, into rivers, lakes, mountains and prairies."

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The subject has received very little help from Pestalozzi. But in comparatively recent years, geography has been accorded a high place in the course of study by Ziller and other disciples of Herbart. Ziller accepted the scientific view of Carl Ritter, that the aim of geography is the description of the earth as the *Home of Man*, but he subordinated this view to the general aim of education which is the all-sided, harmonious development of all the faculties, hence, geography is not only an exercise for the memory, but also a means to develop the powers of observation, imagination and reasoning.

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Since geography is to consider the earth as the home of man, it is closely connected with the influences that have made our country and our planet a suitable place for habitation, hence the study of geography should be correlated with the study of human history and natural history. The carrying out of Ziller's views in practice has given rise to what is known as the topical method in the instruction of geography. The topical method demands from the teacher the knowledge of the laws of the operation of the human mind ; it further demands that the knowledge should be utilized in the process of instruction. The teacher is not to give dry geographical facts to memorize, but he is to train the observing powers of the pupil; he is to appeal to his imagination, to direct the self-activity of the child, to develop his reasoning powers, and to relate facts as cause and effect; lastly, the topical method demands from the teacher careful daily preparation.

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The teacher is not to rely mainly upon the text-book, but he is to supplement this by information from other sources. Books of travel should be made one of the principal aids in teaching geography; the study of the map should be subordinated to other important facts, such as soil, climate, productions, the characteristic plants, animals, industries, peculiarities and habits of the different races and their religions.

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Of course, we are not to forget that the topical method renders its great service, mainly, in the selection and the arrangement of the material for study, but it does not exhaust the question of presentation of the material. Here the teacher, by the use of maps of different scales, often leads his pupils to erroneous ideas in regard to the relative size of countries and to wrong conceptions of their relative positions. This can only be avoided by according the globe a prominent place in the teaching of elementary geography. The teacher should use the globe to fix the idea of the shape of the earth as a sphere, and the division of its surface into oceans, continents, and other divisions of water and land.

From the Geography Monograph.

Geography.

THIRD YEAR—FIRST HALF.

COURSE OF STUDY—Earth Study: Study of the surface; plains, slopes, hills, drainage; surface water, rivers, ponds, lakes, shores, and banks. Natural Phenomena: Cardinal points; observe sunrise and sunset; length of days; length and direction of shadows. Direction of winds; relation of winds to storms; development of storms.

The study of geography in this grade is, of course, of a very elementary character. The natural phenomena, so closely interwoven with it, are taken up as an integral part of the subject. As in all other subjects, it is necessary to begin with a rapid review of the work of the previous half year.

METHODS—Nature herself supplies the materials for earth study and the study of natural phenomena: The sun, the water, the city streets, are studied. The Nature Study work on animals is so closely interrelated with the earth study as to make it necessary to correlate these two branches. It must be obvious that slopes, hills, ponds, etc., will impress themselves upon the child's mind most vividly, if the animals living on them, or swimming in them, are studied at the same time.

The children are lead to observe minutely the changes of the shadows in the school yard and the shore lines of the water which may be found near the school house. After a heavy fall of rain, a large pool of water often forms many of the natural divisions of land and water. The children are led to observe these. Whenever practicable, the sand table is used. After the child has observed nature out of doors, he moulds for himself the mountains, slopes, etc.

Drawing is one of the studies which proves most helpful in illustrating and explaining this work. Charts and pictures also arouse enthusiasm and interest, as do poems and stories relevant to the subject. The child often remembers a fact much better by getting a word picture or description in choice rhythmic language. Stevenson's poem of "The Shadow" will readily appeal to the child's mind, while the "Story of Mercury," in whose footsteps beautiful flowers grew, makes an excellent story of the clouds and wind. Needless to say, Tennyson's "Brook," babbling on forever, will interest the pupils.

Written accounts naturally follow the oral discussions.

RESULTS—The child becomes interested in the earth itself, and later enters upon the deeper topics in geography with a feeling that they are realities.

A love of reading is instilled into the child. It is a noticeable fact that books of travel constitute a large percentage of the volumes drawn from the public libraries.

The so called "New Method" is founded upon the influence of God's creations upon the mind. A great advantage gained by the child from being in close association with nature, is the preservation of his pure and fresh imagination.

Marybelle Lounsbury, Class Teacher, P. S. No. 156.

THIRD YEAR—FIRST HALF.

In natural phenomena the children have first been led to observe the every day phenomena surrounding them—the sun, its rising and setting, its influence on the length and direction of shadows and the varying length of days which the changing seasons bring, the stars from which with the sun they have ascertained absolute direction, the various forms of water as found in rain and snow, the direction of winds and their relation to storms. These observations have been verified and supplemented by the teacher's knowledge, and the result, after oral discussion, recorded in the form of compositions.

The same method has been pursued in Earth Study. The children first found the plain, slope, hill, river, pond, and lake in miniature in their immediate neighborhood. Modeling, drawing, descriptions and the study of pictures have broadened these ideas into an intelligent conception of the different forms of earth surface, surface waters and the related system of drainage.

To render the work interesting as well as permanent the old Roman and Greek myths have been correlated with the geography, and the best English poetry, read or memorized, has been interwoven wherever possible.

Janet Weil, Class Teacher, P. S. No. 151.

THIRD YEAR—SECOND HALF.

COURSE OF STUDY—Natural Phenomena: Observations made on the daily phenomena, and recorded on charts prepared by the children. Effects of heat and cold on water, man, animals and plants, shown by illustrations, as, the diminution of water in a kettle after boiling; the freezing of water in a glass over night. Hibernation of animals, migration of birds, and the habits and customs of man in adapting himself to climatic conditions were discussed.

EARTH STUDY.—Seeds sown in different kinds of soil and reading lessons on the subject, give ideas of cultivation, and the relations of plants to soil. From their observations of the action of water on slopes, and the need of the plant for good nourishment the children were led to deduce the fact that the best vegetation is found on level ground.

Study of topography and rocks of New York: Starting with the school, the child advanced step by step to a knowledge of the geography of New York City; its people, their occupations, its government, the principal buildings, statues and monuments. In connection with lessons on the latter, stones used in their construction were studied.

The earth as a globe: Home types of land and water were utilized in studying the natural divisions. Motions of the earth were illustrated with an orange, a ball of worsted and knitting needle. Some idea of the earth's size was given by telling the length of time for an ocean voyage or a journey around the world.

In all the geography lessons children were encouraged to tell what they knew, then comprehensive facts were added. Stories and poems relating to nature were read to the children, and some pieces of poetry memorized.

When opportunity offered, history was correlated with geography. The oral lesson was reduced in writing. During this lesson the children were allowed to ask the spelling of new words. Work was illustrated when it was considered helpful. Both drawing and writing served to fix the facts in the child's memory.

Aids used: When feasible journeys were made to nearby places, as a visit to the Battery, to Central Park, to a street having a steep slope. Supplementary reading lessons on various topics were given, pictures were shown and simple experiments made. The globe and maps were brought into use.

Results expected: At the end of the term, it is to be hoped that the child's ideas have been broadened, his vocabulary increased, greater facility in oral and written expression attained, and that voluntary observation has become a habit which will bring the child into close communion with nature.

Mary J. Greene, Class Teacher, P. S. No. 137.

THIRD YEAR—SECOND HALF.

In Natural Phenomena the children have throughout the entire term in their weather records, recorded their daily observations of the weather. On these charts, also important national events have also been emphasized, thus correlating history and geography.

The effects of heat and cold on water, plants, animals and man have been studied as the children have seen the results around them, that is,—the evaporation and condensation of water; the fading and falling of leaves; the migration of birds; the hibernation of animals and their own preparation for winter. The great question growing out of these observations, adaptation to climate, have been discussed by selecting peoples of different climates and by means of pictures and stories showing how they have adapted themselves to varying climatic conditions.

Under Earth Study the relation of plant life to soil and surface has been reviewed from a broad standpoint; the children have learned in previous grades by observation the necessity of rich soil and level surface to produce abundant plant life. With this knowledge as a basis the luxuriant vegetation of the tropics has been contrasted with the barren lands of the frozen North; the fertile valleys with the sparsely covered hills.

The study of the rocks of New York included the examination and discussion of such as the children see in their daily life. In the topography of New York the most general statements have been given, Manhattan Island being modeled in clay to explain these statements.

That the earth is a globe with its natural divisions of land and water masses has been studied on the broadest lines in order to give the children a general idea of the earth as a whole. Whenever and wherever it has been possible stories and poems applicable to the work have been read or memorized by the class.

Alice Foran, Class Teacher, P. S. No. 151.

FOURTH YEAR—FIRST HALF.

The aim of the study of geography is ever before the teacher's mind—viz; the study of the earth, with its land, water, air, plants and animals; and the study of man, his mode of living, occupation, enlightenment and government; and, finally, the relationships between the two—nature and man,

The general method is based on the child's experience—his observation and, later, reflection.

(*a*) The individual notions of the child from past experience are brought out, diminished or enlarged in content, and correct individual notions apperceived or assimilated.

(*b*) By a synthetic method, new knowledge is related to the old, feelings and emotions stimulated and interest aroused. The related concepts are developed, rationally unified, and led to an end, the general notion—a definition or principle. In this stage the imagination and reflective activity of the mind are brought into active use.

SPECIAL METHOD.—(*a*)—Nearby physical features of the earth are observed with and without the teacher. In this, the aim is first placed before the child's mind, individual notions hinted at, and general truths foreshadowed, in preparatory talks by the teacher and pupils.

(*b*). The ideas gained by the pupils in these expeditions are brought out by the teacher, in the class-room, and false notions are corrected.

(*c*). Verbal descriptions are gained by the pupils, with work on the blackboard—drawings and original maps.

(*d*). Pictures and printed atlases used.

(*e*). The rising and setting of the sun is noticed by the children from time to time. The duration of the days, lengths and directions of shadows, seasons, storms etc., are the subjects of frequent conversations.

(*f*). Pictures explained by the pupils.

(*g*). The reading and writing of descriptions.

The work is always correlated with the history and nature-study of the grade.

AIDS.—The globe, text-book, atlases, trays with sand or clay, compass, sun-dial, descriptions in readers, science books etc. The study of local geography leads up to a study of the world. As in the kindergarten, a miniature community is worked out, with its ideas of co-operation and mutual dependence, so also, does the study of local geography lay the correct basis for the study of the world, with its variations in physical features, in climate and soil, its various races of men, their occupations, customs, manners, morals, religions and governments. It is therefore necessary to have clear and correct notions of the local elements by the means of which the study of the world is to be comprehended.

Subject-matter and order of presentation.

Surface and drainage.—Observation of nearby streets. New and old streets. City built in a way to afford the best drainage.

Streets high in center, sloping toward curb. Sidewalks slope toward gutter. Sewers. Pipes underground leading to rivers. Sewers of great cities. Their importance in regard to health.

Slopes.—City and country places visited. Hills in the parks. Various streets of the city are hills ; *e. g.*, 101st to 102d Streets on Lexington Avenue. Sides of hills called slopes. Illustrate by crumpled paper and drawings.

Rivers around the city.—Observation of rivers. Correlated with slopes and drainage. Cities nearly always built on rivers. Why? The great harbor of New York. Immense traffic to all parts of the country and transportation to foreign countries. Principal exports and imports.

New York Bay.—Its size, and great natural advantages for shipping etc. Its numerous islands affording sites for defenses, health and criminal institutions. Short conversations about each.

Distances and Directions.—From school to places in the vicinity. From home to nearby places. The directions taken to and from such places. Points of the compass marked in the class-room. The hand compass examined by each boy. The rising and setting of the sun. The length and direction of its shadows at different times. Twenty avenue blocks reckoned as one mile.

Blocks, avenues, streets.—Name and direction in which they run. Residence streets and business streets. The streets in the older part of the city compared with the streets in the newer part. Reasons for difference.

Important localities.—Business districts. Money centers. Residential districts.

Parks.—Location of each. For health and recreation. Zoological and botanical gardens. Monuments. Aquarium. Buildings.

Buildings.—Municipal buildings. Public buildings. Libraries, museums, hospitals, hotels, newspaper offices. Schools. Churches. Where situated. Business transacted in each.

Travel and transportation.—Surface roads; bridges; ferries. Bicycles, automobiles, railroads, sail boats, steam boats. Various routes of travel within the city ; to nearby places, and to distant places.

Occupations and industries.—Dependent upon climate, soil, and other natural advantages. Manufactures ; commerce ; agriculture ; mining. Inventions. The professions and trades. Exporting and importing.

The world.—Form, size, surface. Illustrated by the globe, maps, eclipses. Surface illustrated by baked apple. How form and size have been demonstrated.

Motions.—Daily and yearly, causing night and day and seasons. Length of time for each motion. Apparent motion of the sun. The seasons. Conversations on each.

Continents.—Their size and relative importance. The portion of land and water. Their people; races, occupations, customs and enlightenment.

Oceans.--Their size and relative importance. Characteristics of each.

Mountains, plains, rivers.—The principal chains of mountains. The large plains in each continent. The two determine the great river basins, and watersheds. Their relations to occupations and commerce.

Climate.—The zones. Continents lying partly in each. Distance from equator; winds; ocean currents.

Life in relation to climate.--Mode of living, houses, occupations, dress, and customs dependent upon climate. The plants, animals, and races of different zones.

Annie A. Callahan, Class Teacher, P. S. No. 103.

FOURTH YEAR—SECOND HALF.

Scope of the Work.—Review of World Study. Relation of continents and oceans to each other. Comparative advantages of position, size, form, and ouline. Continents in general. Each great body of land is studied with reference to its relative position, size, form and outline. Observe which part of the world ridge is on each continent. Study of the surface and drainage climate and production of each continent. Industries resulting from these productions. Stories of various races. Their connection with current events.

North America in Detail. Review of physical features, including fertile areas. The effect of these features on the location and growth of important cities. Industries resulting from these productions. Distribution of people in North America. Historical facts connected with this distribution. Routes of travel determined by physical features and by distribution of inhabitants.

Distribution of the Topics. 1st Week. Review of World History. Continents and oceans in relation to each other. Comparative advantages in this respect. Accessibility, climate, distance from equator; elevation, contiguity to oceans. Mountain chain around the world.

2d Week. Continents in General. North America, relative position, size, form. Outline indentations, projections, accessibility. Surface, highland, lowland, coast, drainage. Climate, latitude, elevation, nearness to oceans. Productions, animal, vegetable, mineral. 5th, 6th, 7th weeks, South America. 8th, 9th weeks, Europe. 10th, 11th weeks, Asia. 12th week, Africa. These continents are studied in the same manner as North America, but with less detail. 13th week and succeeding weeks, North America, in somewhat greater detail. Review of physical features including fertile areas. Countries, nationality of people, location, comparative size. Chief cities, location and growth depending on physical features. People, distribution, industries, routes of travel determined by physical features and distribution of inhabitants. The last three weeks are taken up with a general review.

METHOD OF INSTRUCTION. In the study of geography, globes, maps, pictures and objects are used. Pupils read, from globes and maps, the physical features of all the continents. Pictures are used to illustrate some interesting or important fact about each feature. Pictures of plants and animals are shown and whenever practicable the natural objects themselves. Simple sketch maps are drawn by the pupils to show the outline of the continents, and also to show areas producing the chief products used at home and sent abroad. Reading books, regular and supplementary, dealing with the subjects under discussion, are read. Illustrative gems from literature are memorized; *e. g.* Hiawatha, by Longfellow, Landing of the Pilgrims, by Hemans; The Hudson, by Wallace Bruce.

In a written exercise, consisting of separate statements, a fact that has been correctly stated is marked in colored pencil or ink, with an oblique line, *e. g.* /. If the statement lacks being perfectly correct, but is considered good, the mark used is a check. Under any other condition, the fact is left unmarked. These marks are placed in the left-hand margin of the paper. When the lesson takes the form of a composition, two or three, most suited to the purpose are selected for oral criticism. The best are marked A. Those which are good B. The rest are left unmarked. To get into class A is an incentive to good work.

RESULT. The pupils have shown a great interest in the work. They are more than ever anxious to read books of travel and adventure. They have made a collection of pictures and clippings relating to the different nations and countries of the world. Altogether they have acquired a comprehensive knowledge of the ground gone over.

Mary Rose Collins, Class Teacher, P. S. No. 26.

FIFTH YEAR—FIRST HALF.

COURSE OF STUDY.—1. Review the continents in detail as in grade 4 B, with particular attention to the Eastern Hemisphere. Comparison of continents in features studied. 2. Europe on the plan outlined for the study of North America; also, distribution of nations in relation to topography and to irregular coast line.

ANALYSIS.—Having thoroughly reviewed the continents with particular attention to the Eastern Hemisphere, the detail of the study of Europe was begun.

Europe as a whole: Location, size and importance, form and outline, climate, surface, drainage, animals, productions, location, size, and form. Shown by means of wall maps, globes; also maps rapidly sketched upon the blackboard and upon paper. Attention was drawn to the long irregular coast line indented by numerous gulfs, bays and seas, thus forming many peninsulas and good harbors for shipping. The pupils were then led to see that the climate largely depended upon latitude, elevation, distance from the sea, ocean and air currents. Europe was divided into—Mediterranean Europe, North Western Europe and Russia for the purpose of studying its climate and productions.

For the study of surface and drainage, the division of the continent into High and Low Europe was first considered ; then the separate ridges, slopes, plains, rivers and river basins and their effect upon fertility and productiveness. Relief maps, drawn by the children, were important aids to the study of the surface.

The separate countries of Europe were then considered. Countries of Europe classified as, The Six Great Powers, The Lesser Powers.

Leading Cities—selected for their importance due to situation, industry, places of interest, historical features, etc. For instance, when studying industries, reasons for their importance and prominence were given—climate, natural resources, surface, population, tastes of people and their civilization. Our touch with Europe was kept in mind.

Route of Travel and Commerce—Well planned imaginary excursions or journeys were taken for pleasure or business, and this part of the work was greatly aided by pictures and supplementary reading.

METHOD.—With geography was correlated history, nature study, pictorial drawing and language. Poems were studied for recitation.

In order to make the subject matter interesting, appropriate pictures including those of scenery, historical places of interest, types of Europeans, and others illustrative of the climate, occupations, homes, etc., and specimens of nature, such as cork, cotton, cocoon of the silk-worm, minerals, etc., were shown. The children were encouraged to tell what they had heard or read on the subject and pictures were drawn by them on the blackboard and paper.

Such books as "The Great Round World," numerous supplementary readers and library books furnished valuable information. Interesting topics were used as the basis of compositions.

With the study of geography, history was correlated in the following manner: With the review of the continents the races of men were considered first, and then the migration of the Hindoos, Greeks, Romans and Persians. When studying Europe as a whole, we studied the part that became civilized first, and then followed the spread of civilization over Europe.

Margaret Lang, Class Teacher, P. S. No. 54.

FIFTH YEAR—SECOND HALF.

The course of study in Geography is as follows: 1. The United States as a whole. 2. Groups of States.

When the pupils have completed the study of the United States as a whole, they will be prepared to take up the Groups of States, which, from their previous knowledge, they will discern is simply a repetition, only more in detail. The history for this grade is: The Colonies, their settlement and colonial history, pioneers within the territory of the present United States, and the territorial growth of our country.

The close relationship of these two studies in this grade makes the subject deeply interesting and enjoyable to both teacher and class. In the course of instruction pursued, the aim has been to lead the children to observe the connection between the geographic condition of the country and the growth of history.

Beginning with the United States as a whole, the first thing considered is its position in the great "Home Continent," which they have already studied in the last half of the fourth year. The position of the United States was compared with that of some other country on the globe.

China is found to be in the same latitude, has the same climate, has good facilities for commerce. Why, then, is the United States so much wealthier and more powerful than China, a country numbering its years by thousands?

The position absolute and relative of the country being defined, a study of its contour follows. By means of a good outline map and an outline sketch on the blackboard, the pupils are shown the long, indented coast line.

They contrast the "rock-bound coast" of New England with the much more broken and sandy shores of the Middle Atlantic States. The need of light-houses, the breakwater off Delaware Bay, the Chesapeake Bay and its great indentation. Then the great Gulf of Mexico. Here their attention is directed to the fact that the Gulf States are exposed to the warm, moist winds of the tropics.

The contour is followed by the division of the United States into its five great regions. The natural curiosities of the Pacific Highland are made plain to the pupils by means of pictures, descriptions from geographical readers, books of travel, and lessons in different class readers.

The Appalachian Highland follows, and is dissected in like manner, and at the same time is contrasted with the Pacific Highland. The grandeur of the scenery in the Adirondacks and White Mountains, and the many beautiful lakes, the fabulous amount of money this great system represents outside, the great forests, within, the mines of coal and iron are all discussed. Supplementary reading for this lesson is on oil wells, natural gas, etc. Each pupil is provided with a note book in which he is encouraged to keep an outline of his work and any notes, which will aid him in composition.

The Mississippi Valley with its great rivers is next presented. The Mississippi River is likened to a giant tree with branches stretching east and west. The supplementary reading in connection with this lesson is about De Soto, La Salle, Joliet, etc. The valley is divided into its different sections—Western Plains, Prairies, Ozark region.

The Great Lakes are considered as great basins of different sizes connected by tubes. A sketch shows that each basin is a little lower than the one on the left, that Erie has the least depth of all, and none below the sea-level, that Ontario has the greatest depth below the sea, that Ontario receives the waters of all the lakes, and that to reach Ontario all this water must fall 165 feet—hence the Niagara Falls. A picture of the falls is placed on the class-room wall.

Having thus discussed the Mississippi Valley, the Atlantic and Pacific slopes are compared in the following manner: width, trend of rivers, climate of Atlantic compared with the Pacific, Piedmont belt (foot of mountain), great agricultural region, swampy lands in Virginia and Carolinas, how Washington tried to reclaim the land, the cultivation of rice, the mild climate of California, its rich mines of precious metals, its fine fruits and wines.

In studying the areas and distribution of products, which are now introduced, outline maps with areas marked in colored crayon are drawn. These are most beautifully illustrated in Frye's Geography. The pupils when studying the Pacific Highland, learned that the rainfall in the great basin and Western Plains is light, and the soil is dry and sandy. They readily see why the Western Plains are treeless, and also why the Eastern half of the United States is more heavily wooded than the Western. The great trees of California are discussed. The geographical readers furnish fields of reading in that line.

When studying the region of gold and silver, the attention of the pupil is called to the growth of California following the discovery of gold. Mention is also made of the recent discovery of gold in the "Klondike" region. By means of a Current Event Book, the pupils are kept in touch with the current events of the day. This book is assigned to a pupil in the class. He pastes in the book all clippings from the newspapers brought in by the pupils and approved by the teacher. The children need but little encouragement to do this work. Another book containing pictures, which bear on the course of study for this grade is kept by another boy.

Studying the areas of distribution of products in this way, I have found that when the pupils divide the States into groups, they have already become acquainted with the names of the States, the mountains, many rivers, the chief commercial points, chief cities, products, manufactures, industries, etc.

Before taking up the groups of States, the Territorial growth of the country is studied. The original thirteen colonies taught. These are illustrated to show the extent of the United States in its infancy. Then is added the Louisiana Purchase, Florida Purchase, Texas, etc. These illustrations make a series of maps in a progressive form, each showing a new acquisition of territory.

The pupils are made acquainted with the particulars of each tract of territory, and they condense the account in their note books. They are ready, having covered the United States as a whole and traced its territorial growth, to dissect it into groups of States.

The following outline is now given to the pupils to copy into their note books: 1. Position, 2. Extent, 3. Outline, 4. Surface, 5. Drainage, 6. Climate, 7. Productions, 8. Commerce, 9. Cities, 10. Social Life.

The effort has been to draw from the pupils, telling only the necessary facts which they cannot discover for themselves. Beginning with the North Atlantic States, the pupils follow the outline with the teacher. To aid the pupils in locating the cities, rivers, etc., selections in literature, anecdotes in history, in short, whatever will aid the memory is introduced and taught. The aim throughout has been to keep in view the fact that it is the mental growth of the pupil that is to be considered, and not how many questions of the text book he can answer.

Ida J. Guiles, Class Teacher, P. S. No. 154.

SIXTH YEAR—FIRST HALF.

Course of Study.—1. Canada, Mexico, Central America, and the West Indies. Physical, political, commercial. Resources, productions, inhabitants, cities, industries. Comparison with the United States. 2. South America in detail. Physical, political, commercial. Resources, productions, exports, imports, people, cities, routes of travel. Comparison with North America. Relations with the United States and Europe.

As the history in this grade is practically the discovery, exploration, conquest, and settlement of the regions mentioned above, a close correlation with the geography is evidently designed.

Method.—The topical method is pursued in our class. It saves time, and, calling for independent work and research on the part of the pupils, rouses their enthusiasm. Topics are assigned for home preparation, and a list of books for reference is furnished to the pupils. This outside reading supplies detail, often giving word pictures of the region under consideration, or showing man's relation to the country he inhabits. In this work, the free libraries are available and are of inestimable value to the schools.

The structural geography of North America as a whole was our first aim. In addition to the physical map, pictures of relief maps and profile sections of the country were used to illustrate elevations and slopes, which led naturally to the drainage of the continent. The surface and drainage explain many facts connected with the climate, the life, the productions, and consequent occupations of the people. Now the pupils see that the character of a country determines the location of the cities, and a reason for their existence is apparent.

A busy wharf in New York furnishes material for a lesson on the growth of cities, and incidentally brings out the work of an exporter, an importer, a commission merchant, and an agent, terms used in the arithmetic of the grade.

Then, two or three lessons on the characteristic plants of such a region as tropical Mexico, the West Indies, or the Selvas, will give the class an idea of occupations resulting from natural products. They see young and old employed in the sugar fields of Cuba. The necessity for haste in boiling the juice is apparent, and they are prepared for sugar factories going day and night during the short season.

Since the map is used only as a diagram, pictures are placed before the pupils to give them a real impression. The pictures used were cut from circulars, routes of travel, guide-books, and magazines. They were mounted on cards and circulated. The trunk lines often issue circulars, giving graphic descriptions. Such are kept intact for reference.

To test their powers of observation, the pupils are required to write a description of a picture studied, or to tell what they gather from it regarding the prevailing customs of that country, thus interrelating geography with composition and language. Rapid sketching of maps from memory is a valuable aid in review.

In teaching South America, the same method is used. The power gained through a topical study of North America comes into play now, and a comparison of the two continents brings out many points of similarity in surface and drainage, and differences in climate and productions.

The comparison of semi-tropical North America with the United States has taught the pupils that "the whole wealth of the world has been created by a union of human industry with the materials which God had originally spread around us." Having thus discovered the influence of climate on civilization, they are prepared to find non-progressive people in tropical South America.

The history has kept pace with the geography, and the pupils see a country whose development has been retarded not only by tropical languor, but by revolutions, unstable government, and civil wars. From their reading, they will learn that an influx of energetic Europeans and Americans is bringing about the conditions necessary to enable South America to take her place among the foremost countries of the world.

Minnie Lutz, Class Teacher, P. S. No. 76.

SIXTH YEAR—SECOND HALE.

COURSE OF STUDY.—1.—Physical Geography: A comparative study of all the continents with reference to physical features; surface, mountains, plateaus, formation of river basins, plains; rivers, kinds, work, uses, floods, deltas, outlines, coast. Climate, temperature, winds, rainfall; ocean currents, effects upon climate; productions, relation to climate and elevation; mineral resources; forests; population, dependence upon surface, climate, outline.—2.—Mathematical Geography: Zones, circles, poles; longitude, latitude, time, motions of earth, effects; tides; eclipses, solar system.

Previous to the work of the grade the child has been gradually led from the known environments of home outward into the great unknown world; from the district in which it lives to its own country and then to other countries, until it has become familiar with the different features of the surface of the earth, its natural divisions, and its political sub-divisions.

In this grade we take up the subject as one great whole, and place before the mind of the child the material globe, with the great life-system upon it, its surrounding atmosphere, the sea and the land, in such a manner that it may realize not only what these elements are in themselves but consider them in their mutual relations, and thus become familiar with the causes which underlie the natural phenomena, and explain their occurrence.

Since, therefore, Physical Geography explains how the laws of nature operate upon the earth, the air, the water and even upon plant and animal life, its proper study would naturally pre-suppose a knowledge of Physical Science; but as Physical Geography precedes this subject in the Course of Study we deemed it advisable to introduce the work in this grade by a preliminary talk on some of the general laws and forces of nature.

Then we consider the Earth as a planet; the position among and relation to other heavenly bodies, especially the sun, its source of light and heat. Here, as well as throughout the whole study, we should utilize to the best advantage the simple observations of the child, and encourage it to make further explorations into the great unknown realm now opened up to it, perhaps for the first time.

Secondly, we consider the envelope of the earth, the air, and lead the child to understand what it really is; that it is permeated with moisture drawn from the sea to keep the land portions of the earth moist and therefore productive; how its movements in the form of constant or variable winds accomplish this purpose.

Next we require the pupil to direct his attention to that vast expanse of water, known as the Sea, which covers the greater portion of the earth's surface; to follow its tides and currents in their work, and trace the vapors evaporated from its surface by the heated atmosphere, until they descend upon the land.

Fourthly, we consider the Land itself; how certain forces of nature acting upon the earth's crust upheaved portions of the bed of the sea causing them to rise above its waters, and thus, Land, the future home of man, made its appearance in the form of continents and islands. Here we carefully compare the various land masses with reference to their relief forms. We then take up those wonderful natural phenomena, volcanoes and earthquakes, study their causes and trace their effects upon the earth's surface.

The great systems of Oceanic and Continental Drainage now claim an important share of our attention; the former with its glaciers, snow-fields and immense river-systems; the latter with its underground rivers, springs, lakes and inland seas.

The evidence of constant change on the surface of the land, as shown so clearly by the formation of deltas, leads us to consider the combined action of air and water, as land sculptors, and thus we drift into the subject of Geology; in fact so closely is this subject linked with that of Physical Geography, that it is impossible to take one step without correlation: therefore we must so arrange the science work of the grade, as to keep pace with the geography. We also correlate with Literature by encouraging the pupil to read simple scientific works. When written lessons are required we encourage the pupil to give simple illustrations with the pen or pencil and so correlate drawing and composition with this subject.

Finally the causes and effects of Climate are considered by us, and we see that there is a geographical distribution of climates, each with its own distinguishing species of plants and animals, and its peculiar races of men.

The objective method of teaching predominates throughout the presentation of this subject. The use of sand, clay and the modeling-board assists in establishing the correct idea of relief forms; while, with the addition of water, the idea of drainage, with all its accompanying effects is exemplified.

Thus from the consideration of the mechanism of this great world of ours, we lead the pupil to see that all works harmoniously toward one great end, namely, the welfare of Mankind; the beneficient design of the Creator.

Sara J. Keenan, Class Teacher, P. S. No. 10.

SIXTH YEAR—SECOND HALF.

In the lower grades, each continent was studied by itself: in this, the work was done by selecting the primary mountain systems of each continent, and making comparisons as to length, height, direction, proximity to sea, causes for their existence, volcanoes, etc. Next the smaller systems, and in turn, plains, plateaus, drainage in general, rivers, seas, etc., were taken and compared; the plains and plateaus as to form, elevation, position and usefulness to mankind; rivers, seas, etc., as to length, general direction, force, and how adapted to man's benefit.

This was accomplished by constant use of maps and globes. The various masses of their features were depicted in various colors, shades and lines on maps drawn to different scales, and what each feature represented thoroughly explained. A careful examination of the map was necessary, before comparisons could be attempted. A map well read, will tell its own story of highland, lowland, drainage, etc. This map-reading caused habits of observation, which, with frequent revision, could not fail to impress upon the pupils' memory the comparative position, size and shape of the various masses. The drainage and land and water masses were compared with the condition of streets and gutters during and after a rain-storm. Floods, deltas, bars, uses of seas, were similarly explained.

The text was, in every case, read and explained and put into simple language expression by the pupils, recourse to the dictionary being encouraged.

Home lessons consisted of map-readings, map-drawings, topical compositions and text lessons.

In the class-room, globes, wall-maps and blackboard-maps were used. The board drawings were filled in by different boys. At first, outline tracing was permitted, physical features being filled in from memory; later, entire maps were drawn from memory. These reproductions were rapidly made, the object being to get general characteristics and not fine map-drawing.

In the teaching of this subject, it was thought best to show the existing facts as resultants, and not merely as facts. The "why" was constantly encouraged and in every practical case, satisfactorily answered.

Among the subjects necessarily more or less adverted to were—history, drawing, composition, arithmetic, spelling, reading and mineralogy, as is obvious from the brief outlines, and finished work herewith submitted.

Louis J. Falk, Class Teacher, P. S. No. 25.

SEVENTH YEAR—FIRST HALF.

METHOD.—Text-book method combined with lecture method, the subject correlated with history, English and drawing.

First.—A study of the United States as to physical features and conditions, location and the influence of the same upon its productions, the character of its people, its government, social and commercial development; its principal cities and to what their growth, location, and importance is due. The study of its dependencies showing how the acquirement of these increases commercial importance, both foreign and domestic; routes of travel and what conditions led to the establishment of the same; their present importance commercially, and why this importance has increased or decreased; the influence of government upon a country and its dependencies, both socially and commercially.

Other countries of North America and those of Europe are studied in like manner, and the same compared with the United States. The commercial relations of the different countries and why these relations exist. What natural resources, methods of transportation, forms of government, or position tend to increase these relations. Treaties.

Much use is made of good magazine articles and illustrations, and pupils are encouraged to make outside research. Current topics are discussed and English constantly emphasized. Compositions on the subjects discussed are written by pupils from time to time. The result of this method has been a lively and continued interest on the part of the class, in all topics relating to the history and progress of nations.

Monah M. Morgan, Class Teacher, P. S. No. 97.

SEVENTH YEAR—SECOND HALF.

The requirements of grade 7B in geography are the political and commercial study in South America, Asia, Africa and Australia; the races of mankind and religions of the world.

In taking up the work of this grade, the topical method is pursued, globes, maps and charts are freely used, oral and written work is required, and the pupils are encouraged to consult encyclopedias, gazetteers, and the daily papers. The lessons are so conducted as to train the pupils in correct expression, and to create a desire to learn something of the history and literature of the people under discussion.

The consideration of the continent of South America embraces its physical, political and commercial geography, and the lessons of the first week treat of the position, plateaus, slopes, plains, drainage, etc. This is followed by an essay on the climate, the distribution of the inhabitants, and the industries and occupations. Then the animal and vegetable life, the resources, productions and commercial routes are taken up. The political and natural boundaries of the countries and the location of the cities, etc., are located on carefully drawn maps. This work is intended to develop correct ideas of form, and exercise judgment, accuracy, taste in coloring, and neatness. Memory maps are also sketched rapidly to show the contour and important details. A review completes the work.

In studying Asia, maps and charts are freely used, and attention is directed to the size, irregular coast-line, highlands, lowlands, deserts, fertile areas, climate, etc. Maps are drawn illustrating this line of work. The next essay treats of Asia as the birthplace of the human race, and of the religions of the world, their history, antiquity and influence on mankind.

Following in order comes the study of animal and vegetable life, more particularly animals, and their uses to man. We next take the governments, resources, commercial routes, exports, the countries of Asia, and the treaty ports of China.

The study of Africa proceeds along similar lines to show the outline, elevations, climate and its effect upon the productions and the industries; the barren and the fertile regions, means of travel, and the distribution of the inhabitants in accordance with the topography of the country. Emphasis is laid upon the territorial partition of Africa by the European powers.

Australia and the surrounding islands are studied in relation to their location, climate, productions and inhabitants. The political institutions are also considered, and the Australian Ballot System and its benefits are fully elucidated.

Frank A. Schmidt, Class Teacher, P. S. No. 49.

SEVENTH YEAR—FIRST HALF.

SCOPE. The work prescribed for this grade is a comparative study of North America and Europe.

PLAN.—In this class these portions of the world are considered as "The Home of Man." Perforce the physical features are reviewed as to their influence on the condition of man, and as to their effect on the commercial, industrial and political relations of the nations concerned.

Man being considered in his abode, the thought of travel easily suggests itself. His methods of conveyance and transportation are next discussed, and so, we are carried on wings of thought to China, where man is the beast of burden, to India, with the elephant, or to Peru, with the llama. Thus we circle the globe, memory recalling history by innumerable associations.

This topic completed, the United States are next considered generally and severally. The vegetable productions of each section are contrasted and compared. Here again the domain of History is invaded; for tobacco is ever associated with our early colonies; cotton recalls Eli Whitney and the Negro; while with the mention of gold, spring up the cession of Mexico, and the admission of California; thus geographical ideas are ever closely associated with those of history.

Leaving North America, we are brought to the seaboard countries of Europe, whose emigrants are the progenitors of the greater part of the population of this land. Inquiry into the causes of this emigration leads to the study and comparison of their governments, army, navy, etc, with like institutions in our own country. A study of their colonial systems, founded by their governments or by the enterprise of the people, leads to every quarter of the globe.

Thus it is that the work of this grade necessitates a review of the preceding and certainly prepares the way for the succeeding. Thus it is that with the geography is ever associated the geology, history and ethnography.

Knowing that the powers of observation are most alert in children, the globe and map are supplemented by pictures to intensify the concept and assist the imagination. Where possible, to avoid overburdening the memory statistics are supplanted by graphic illustration.

RESULTS. The mention and discussion of topics historical, biographical, etc., in the class have led to personal investigations on the part of many of the pupils. They have borrowed books from the neighboring libraries and in the class have read from them many new and interesting selections. The interest thus aroused has led some to read more and better books. with a consequent tendency to improve their language, increase their vocabulary, and familiarize them with the use of geographical terms.

Edward F. McSorley, Class Teacher, P. S. No. 25.

SEVENTH YEAR—SECOND HALF.

South America having been taken up in a preceding grade, a comparatively short time need be given to its study. It is necessary however, to recall the main features of its elevation, drainage, climate and coast line, as affecting either the nature and the location of its productions, or the character of its inhabitants, and their means of communication with each other and with the outside world. In considering it politically, the fickle character of a considerable portion of its population, resulting in frequent overturning of governments republican only in name, is pointed out as tending to discourage the investment of capital; while, on the other hand, under a more stable rule, the progress of countries like Chili and Argentine is noted.

Passing to the commercial relations between South America and the United States, we find them far more satisfactory, owing largely to limited means of communication. Latest reports show that, of our total agricultural exports for five years, less than two per cent. were marketed in South America. Although coal can be shipped as cheap from Newport News as from England, European traders have the advantage of regular and frequent steam connections with South American ports.

The complex structure of Asia, with its vast distances, its variety of climate, and its barriers of mountains and deserts, leads us to expect a resulting diversity of races and occupations. In its fertile river basins we find the ancient seats of empire and centres of trade. From those in proximity to Europe have proceeded the beginnings of Western civilization. India and China, shut in by almost impassable bounds of desert and mountain, have sunk into stagnant civilizations which have yielded, or seem about to yield to the inroads of foreign colonizers.

In studying the political map of Asia, we observe the growing interests of Germany in Asia Minor and the Euphrates Valley, the steady progress of Russia, from the West and North, towards coveted Southern ports, building, as she advances, railways on which to move her armies, and the occupation of these powers, together with Great Britain and France, of advantageous positions on the Eastern coast.

Our own recently acquired Pacific possessions give the United States a vastly increased interest in Oriental trade and a corresponding desire for open markets for its goods. We look to the Philippines, to China, Japan, and Korea for markets for the flour and lumber of the Pacific States, the raw and manufactured cotton of the South, the petroleum and cotton goods of the East, and the manufactured iron of the Central West. Therefore the attention of the pupil is directed to the present and prospective importance of the Pacific, as the highway of a commerce which already requires for its prosecution seven lines of steamships from our Western coast.

Africa, viewed commercially, is regarded as divided into two distinct parts by the Desert of Sahara. The country to the North by means of the Mediterranean, has been in communication with Southern Europe for centuries. That to the South, except for a narrow fringe, has been unknown until recent years. The disadvantages, as regards trade, under which this portion of Africa labors, are apparent. Among them are the absence, near the coast, of industrious peoples with raw or manufactured products to invite trade, and the difficulty of penetrating the interior, owing to the character of the rivers. Now that the continent has been parceled out among European nations, we may expect that the rivalries of commerce will develop methods of communication that will supplant the slow and costly means of transport by native porters.

In Australia, we notice the wonderful advance in civilization which a colonial population has made in a period scarcely exceeding the lifetime of two generations. We see that the energy of its explorers and settlers, almost entirely of British stock, has converted what was, at the beginning of the century, practically an unknown land, into the home of nearly four millions of busy people, said to be, man for man, the richest on the globe.

After the pupil has studied somewhat in detail the different continents, he is better prepared to take a comprehensive view of their commercial relations and to understand the comparative advantages or disadvantages depending upon location and character of people. A simple race division of mankind, based on the color of the skin, and the kind of hair, is into the White, the Black, and the Yellow, three or four sub-divisions of each being made.

Under the head of the "Religions of the World," we find the two great divisions of monotheism and polytheism, each embracing three sub-heads. The distinction of the chief representatives of these races and religions is taught as the different countries come up for study in the course of grade work.

Edward W. Rice, Class Teacher, P. S. No. 101.

History.

INTRODUCTION.

HOW HISTORY SHOULD BE TAUGHT.

From the Report of the Conference on History to the Committee of Ten:

"The result which is popularly supposed to be gained from history, and which most teachers aim to reach, is the acquirement of a body of useful facts. In our judgment this is in itself the most difficult and the least important outcome of historical study. Facts of themselves are hard to learn, even when supported by artificial systems of memorizing, and the value of detached historical facts is small in proportion to the effort necessary to acquire and retain them."

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"The principal end of all education is training. In this respect history has a value different from, but in no way inferior to, that of language, mechanics, and science. The mind is chiefly developed in three ways: by cultivating the powers of discriminating observation; by strengthening the logical faculty of following an argument from point to point; and by improving the process of comparison, that is, the judgment.

"As studies in language and in the natural sciences are best adapted to cultivate the habits of observation: as mathematics are the traditional training of the reasoning faculties: so history and its allied branches are better adapted than any other studies to promote the invaluable mental power which we call the judgment. Hence statesmen have usually been careful students of history."

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"Another very important object of historical teaching is moral training. History is the study of human character. 'Perhaps the most valuable part of our work,' says a teacher, 'is that we are all made—teacher as well as pupil—to learn personal lessons from history, to watch the course of humanity as we would that of an individual, to shun its errors, and make use of its excellencies,' and it is a study in which the mistakes and failures of national life, like those of private life, become suggestive warnings."

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"To sum up, one object of historical study is the acquirement of useful facts; but the chief object is the training of the judgment, in selecting the grounds of an opinion, in accumulating materials for an opinion, in putting things together, in generalizing upon facts, in estimating character, in applying the lessons of history to current events, and in accustoming children to state their conclusions in their own words."

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"It is well in a brief talk to present the substance of the next or of approaching lessons, so as to suggest to the scholar the relations of the facts he is about to study. 'In my presentation of a subject,' writes a teacher, 'I always work from circumference to center. I sketch, first, the barest outlines of the whole, so that the pupils may see the bearing and feel the relative importance of the subject in hand."

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"Set lectures on the lesson, while very suitable for colleges, are not so well adapted to schools. To be useful, they require elaborate note-taking,—a severe strain if well done, and if ill done productive of mental dissipation. We incline to recommend only informal talks which will explain the cause and effect of events, and which may add interesting illustrations and comparisons to the lesson of the day, as it appears in the text-book."

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"We recommend further that a practice be established in the schools of using two, three, or four parallel text-books at a time. By preparing in different books, or, by using more than one book on a lesson, pupils will acquire the habit of comparison and the no less important habit of doubting whether any one book covers the ground. The practical difficulties are few; where school boards buy text-books, four sets of ten books each, cost no more than one set of forty books."

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"What is learned in text-books ought in most cases to be brought home to the mind in recitations, which should be less a test of faithfulness than a supplement to the reading. It is better to omit history altogether than to teach it in the old-fashioned way, by setting pupils painfully to reproduce the words of a text-book, without comment or suggestion on the teacher's part. The first duty of the teacher is to emphasize the essential points in the book, to show, if possible, what is the main thing worth remembering in the lesson of the day."

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"Again, the question in a recitation ought not to demand from the pupils a bald repetition of the phrases or ideas of the book, but ought to call for comparison and comment. The opinions ought constantly to go forward and backward, to bring up points of comparison from previous lessons, and to bring in illustrations from other parallel subjects."

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"How far should pupils be expected to memorize? 'A few things should be learned by heart, and, when forgotten, learned again, to serve as a firm ground-work upon which to group one's knowledge: without knowing the succession of dynasties, or of sovereigns, or of presidents, or the dates of the great constitutional events, the pupil's stock of information will have no more form than a jelly-fish.' But those few necessary facts ought to be clearly defined as only a framework to assist the memory."

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"An excellent suggestion is that of 'open text-book recitations,' in which with their books before them, pupils are asked questions on cause and effect, on relations with previous lessons, etc.: answers may, if necessary, be written out and corrected in class. Such an exercise trains pupils to take in the thought of a printed page, and to grasp the essential points.

"Such a system tends to encourage the habit of applying what one knows to a new problem. Still more hopeful in the same direction are the off-hand discussions and impromptu debates which spring up in an eager class, and which should be encouraged by every good teacher."

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"Another form of recitation is the written exercise repeated at frequent intervals: a single properly framed question given at the beginning or end of each recitation, with ten minutes to answer it in writing, will train pupils in the habit of combining and applying their own information. For such an exercise, questions involving comparisons are well adapted."

History.

FOURTH YEAR—FIRST HALF.

There are two divisions of the history taught in this grade. I. Local History. (a) Settlement of Manhattan Island. (b) Short stories of men prominent in the history of the city. 2. World History. (a) Old stories of the East. (b) Norse legends. (c) Myths.

The home history is essentially local and consists mainly of stories relative to the discovery of the Hudson River, the settlement of Manhattan Island, stories of the Indian tribes in the immediate vicinity, and of the early settlers, customs, means of travel, source of supplies, occupations, etc. This history includes sketches of the lives and influence of men prominent in local history, especially of Hudson, Stuyvesant, Fulton, and Peter Cooper. To this is added monuments, buildings and places which have an historical interest.

Under world history are included the Greek myths of Ceres, Aeolus, Apollo, Vulcan and Neptune and the Norse legends of Leif and Thorwald. Under old stories of the East, the Flood, the Tower of Babel, the Crossing of the Red Sea.

The general plan pursued in history is to tell the pupils short stories, correlating with their geography and drawing. For a drill, the pupils are questioned so as to bring out salient points. Summary : Placing questions on the blackboard in the form of topics, so that children can write statements, thus producing a connected story and correlating language.

Eleanor C. Gleason, Class Teacher P. S. No. 79.

FOURTH YEAR—FIRST HALF.

The home history of this grade treats of the early Dutch settlements, beginning with the discovery of the Hudson River. This introduces the Indian, the first inhabitant of this continent, who was seen by Henry Hudson as he sailed up our beautiful river. The discovery of the Hudson led to the settlement of Manhattan Island by the Dutch, and we learn of their merrymakings, their mode of life, occupations and means of travel.

Closely interwoven with the growth of the colony are the points of historic interest connected with the island. Cooper Union is a living testimony of the generosity of Peter Cooper. And who looking upon the Hudson can ever forget what Robert Fulton did for the cause of commerce ? Brave old Peter Stuyvesant is recalled every time the square named after him is traversed.

In the World History the science of the grade serves as a basis for some of the classic stories of earth, sun, water, air and fire.

Two lessons each week are assigned to the subject. The first, a narration by the teacher, and from the pupils, development of new thoughts. In the second, the stories are reproduced by the children, orally and in writing. Frequent use is made of maps, pictures and blackboard illustrations.

Alys J. Dabour, Class Teacher P. S. No. 73.

FOURTH YEAR—SECOND HALF.

COURSE OF STUDY. (1) The World History : Classic stories of the Old World ; stories of early nations around the Mediterranean Sea ; early adventures, as Marco Polo, Da Gama, traders with the East. (2) The New world : Stories of discovery and exploration. Stories of the Indians, Esquimaux, and other early American people. Stories of the Norsemen, Columbus, De Soto, Balboa, Magellan, Cabot, Drake, Hudson.

The work of this grade, as in previous grades, consists of stories of the World's History and of the History of the New World told to the children by the teacher and then retold by the children and in many cases reproduced in writing.

The teacher's aim has been to so plan these stories that they shall make a more or less connected narrative from earliest time to the early part of the Seventeenth Century. The plan followed has been to trace the history of peoples and men rather than to give much attention to battles and conquests. With this in view, the teacher told brief stories of the Aryans from the earliest known history and traced the gradual spread of civilization westward through Europe to America. This gave a connected account of the Aryans, Egyptians, Phoenicians, Greeks and Romans, with an account of the Roman Empire and its extension into Spain and Portugal and to Great Britain where it came in touch with the people of Northern Europe. This naturally led to stories of the Norsemen and their journeys to Iceland, to Greenland and finally to America.

The stories of the wealth of the Indies, which had been told in Southern Europe, led adventurous travelers and brave seamen like Da Gama and Columbus to try to reach these far off lands. The discoveries of Da Gama and Columbus led the English to make voyages in the same direction, and stories of the Cabots and of Drake furnish the material for this part of the work. The discoveries of Columbus led naturally to stories of Balboa, Magellan and De Soto. The story of Henry Hudson and his voyage to the New World brings the children to familiar scenes and to a realizing sense of the close touch of all that they have heard, with the river, bay and island near their homes.

In all this work the teacher has made constant use of the map of the world, and the children have drawn maps, have collected and drawn pictures illustrating the subject matter and have reproduced many of the subjects in compositions.

Mary H. Herbert, Teacher, P. S. No. 60.

FOURTH YEAR—SECOND HALF.

In whatever guise presented, history is a subject for the philosopher, the student, the moralist, and, though lightly dealt with in school by the teacher, it demands from her thoughtful reading and careful preparation for the attainment of happy results in teaching it. With such a conception of the magnitude of this subject, the teacher pursued the following outline with some degree of success.

Starting from Egypt as the birthplace of the earliest recorded civilization, she led the child by logical stages to follow the successive steps taken by the human race in its progressive march. Leaving the mythical Egyptians the child passed to a study of the Chaldeans, the founders of Asiatic culture, tracing to the influence of that people, the rapid development of the arts and sciences among the Assyrian-Babylonian nations.

Through the study of the latter peoples, the child was introduced to their vassals, the Hebrews, to their commercial allies, the Phoenicians, and to the Persians, contestants with the Babylonians for Asiatic supremacy.

The maritime enterprise of the Phoenicians brought the child, in turn, to the peoples of Southern Europe, the beauty-loving Greeks and the martial Romans. Here opportunity was afforded for introducing those classic myths that have for child and man alike, an unfailing charm in the recital of heroic feats and god like deeds.

After studying the Romans, the stage of human events was transferred from Europe to America; and the child followed the footsteps of the resolute Columbus, of the courageous Cortez, of the indomitable De Soto, with the same unflagging interest that the tour into the realms of Grecian story evoked.

In order that the child might have a better understanding of the life of a people, he was first taught its physical surroundings that he might learn how environment had influenced its destiny. In securing such an understanding, the aid rendered by historic charts was of inestimable value. The most salient features of the nation's life were then related by the teacher as graphically as the subject permitted.

This description brought to the child's observation many new words. That he might right reach the full significance of the story, such words were placed upon the board and carefully explained, the orthography of the more important words being reserved for special study. To impress these words upon the child's memory, the teacher introduced them into her conversation; and she was often gratified to note the pleased look which flashed across the child's face as he recognized their import.

By means of a topical outline placed before him the child was enabled to render an oral reproduction of the teacher's story. This recital gave the members of the class innumerable opportunities for exercising their critical faculties. Care, however, was taken not to interrupt the narrator except to correct obscurity of expression or errors in English.

When sufficient time had been allowed the child for the mental assimilation of his new ideas, he was required to write his conception of the story—aided by a topical outline.

Simple books, relating to the peoples studied, were read by the pupil, and served the two-fold purpose of stimulating the child's interest in the lessons and of creating a taste for historical literature.

In presenting the subject of history to the child, it has been the constant aim of the teacher, 1. To give the child a freer use of language; 2. To develop his imaginative powers; 3. To increase his knowledge; 4. To widen his mental horizon so that he may view natural events with a truer comprehension.

The teacher hopes that she has impressed upon the child the imperishable truth that only those nations and individuals who have cultivated what was truest and best, have ever really helped in the progress of the world.

Lulu R. Kirkman, Class Teacher P. S. No. 41.

FIFTH YEAR—FIRST HALF.

Course of Study. 1. Stories of the Old World typical of the races of mankind. 2. Exploits and adventures of Europeans in the attempt to plant new empires. a. Spanish explorations and colonization; b. English explorations and colonization; c. French explorations and colonization; d. Portuguese explorations and colonization.

The work in history in this grade being along the same lines as that of the geography, the two subjects are studied in their relation to each other, more especially during the first few weeks of the term. This applies particularly to the "stories of the Old World typical of the races of mankind." Beginning with the awakening of interest in maritime enterprises about the year 1400, the history of this grade follows the results through the next two centuries. A review of the early history of the world as it was known before this period, and of the limited knowledge of geography and navigation, seems not only advisable but absolutely necessary; and since Portugal was the pioneer country in the work of exploration and colonization, the Portuguese explorers are naturally the first to receive attention, the others being introduced in the order of time.

A portion of the blackboard is reserved for the work in discovery, exploration, etc., and on this is drawn an outline map of the world. As each exploration is studied, the route followed, the country discovered and explored, and the colonies founded are represented on this map.

Occasionally, the topic to be studied is mentioned to the pupils on the day preceding the lesson, with instructions to consult such histories as may be available. By this means a greater variety of facts is brought out than may be obtained from a single text book.

The judgment and reasoning powers are trained by showing the conditions existing at different periods and encouraging the pupils to reflect for themselves upon the natural results of such conditions. Since stories of the childhood of important personages arouse the sympathy of children, such stories are read in class by the pupils or teacher. The few moments before the opening of school are often thus utilized. Such readings not only increase knowledge, but aid in punctuality and discipline.

Poems, such as Butterworth's "Ponce de Leon" and Heman's "Landing of the Pilgrims" supplement the regular instruction and others that are not too long, are learned for recitation. Appropriate illustrations are often used, either as a means of review, or as suggestions for composition.

Anniversaries of important events are used as a means of instruction or review. The many statues which our city contains are objective methods of instruction. The children are encouraged to visit them and obtain what information they can from their inscriptions.

In the matter of dates, only the most important are taught; and wherever possible, one date is made the central point around which a number of events are grouped. Finally, a general knowledge of the influence of the character, manners, and customs of the early settlers on the later history of our country, is given to the children.

Marion E. Watkins, Class Teacher, P. S. No. 101.

FIFTH YEAR—FIRST HALF.

From this course of study it may be seen that it is possible for the teacher, starting with the Aryan race, to show the westward progress of civilization into Persia, Greece, Rome, the formation of the English nation and the tendency to move still further westward by crossing the Atlantic to America.

Two lessons a week of forty minutes each are assigned to history in our 5 A class. To familiarize the pupils with the physical features of the country under discussion, a geography lesson always preceded a history exercise. Every event studied was located on the map. Pictures were used liberally to aid the children in forming right conceptions of important persons, localities, buildings, dress, etc.

Stories of the domestic life of the people were introduced as often as possible. Child life of the long ago was compared with that of to-day. The important personage of a period was often made the basis of a lesson and a few principal events of the epoch focussed about him. At the close of the lesson, a few pupils were asked to reproduce its subject matter and then the members of the class were encouraged to ask questions. The second lesson of the week consisted of two parts. The first was devoted to a review of the previous lesson and the second comprised the new matter.

At the end of each month, the class was divided into sections. To each was given a certain topic and the children were asked to write brief, connected statements about their particular topics.

During the last month of the term, the entire work of the grade was reviewed. Sometimes certain pupils were asked to form test questions and others were called upon to answer these. Again, a scholar was asked to impersonate an historical character and tell his or her life story. Maps with journeys and voyages indicated were drawn during these reviews.

Of great assistance to the teacher was the class library which contains several books replete with geographical and historical matter, delightfully told. The scholars took the liveliest interest in this feature of the work and the teacher found her instruction impressed and supplemented by this outside reading on the part of the pupils.

Mary A. Murphy, Class Teacher, P. S. No. 73.

FIFTH YEAR—SECOND HALF.

The study of History in Grade 5 B. may be grouped about two centres. (1). Settlements. (2). Colonial History. I have divided the subject into the following method units :

SETTLEMENTS—(a) The Spaniards explored and settled in the West Indies, South America, Mexico. Florida and New Mexico. (b) The English explored the Atlantic Coast and claimed all the territory under the names of North Virginia and South Virginia. (c) The French explored the interior and named their territory New France. (d) The Dutch named their American territory New Netherlands. This group of subjects can be covered in the first four weeks of the term.

COLONIAL HISTORY—This may be arranged by the order of colonial establishment. This portion of the work covers the second, third, and fourth months of the term. I divided the fifth month between review and Territorial Growth, the latter under the following units: Louisiana Purchase; Florida Purchase; Annexation of Texas; Mexican Cession; Gadsden Purchase; Alaska; East and West Indian Expansion.

The aim of the teacher should be to teach the facts of history, to furnish motives to right living. The object of the pupil should be to study the origin, the character, the growth of the nation. The results to be obtained are the cultivation of the moral sympathies, the quickening of the imagination, development of the memory, aiding of reflection and the control and direction of the will.

The study of United States history should infuse into the minds of American youths the American spirit, a benevolent disposition toward all classes of citizens, a willing obedience to the Constitution and the laws ; and a deep and abiding love for the Union and the Star Spangled Banner.

The instruction in History should be brought into organic connection with the study of language ; for this reason reading is to be an auxiliary. Recitations of patriotic poems and ballads can be woven in profitably. That geography must aid history is self evident.

Margaret L. McKeon, Class Teacher, P. S. No. 23.

FIFTH YEAR—SECOND HALF.

COURSE OF STUDY—Colonial History: Pioneers within the territory of the present United States. Virginia: Sir Walter Raleigh, Captain John Smith. New York: Henry Hudson, Peter Stuyvesant. Massachusetts: Myles Standish, King Phillip's War. Rhode Island: Roger Williams. Pennsylvania: William Penn. Georgia: Oglethorpe.

Territorial Growth.—Florida: Ponce de Leon. Louisiana: La Salle. Northwest Territory: Daniel Boone. Oregon Territory:

Captains Gray, Lewis and Clarke. California: Discovery of Gold. Alaska, Hawaii, Cuba, Porto Rico, Philippines.

The work in history is carefully planned by the teacher before being given to the class. The subject matter is divided into topics. The lessons are taught orally in the form of a story, and reproduced by the children in their own language, as an exercise in composition; geography, biography, chronology, literature and drawing are correlated with the lessons in history.

Essentials are impressed upon the memory; non-essentials are introduced merely to excite interest and to promote attention. Pictures of famous men, places, events, etc., are used as aids in teaching the subjects. They help to impress upon the minds of the children the facts taught.

History develops the imagination, stimulates patriotism, and creates in the minds of the pupils a desire to emulate the deeds of famous men.

Annie V. Kielly, Class Teacher, P. S. No. 79.

SIXTH YEAR—FIRST HALF.

Course of Study.—(1) Discovery, exploration, conquest and settlement of portions of North America not previously studied, and of South America. Comparison with corresponding settlements and growth of sections of the United States. (2) Intercolonial Wars: Incidentally the contemporaneous Wars, Period between the French and Indian War and the Revolution. (3) Establishment of South American Nations.

Aim.—(1) To make good citizens, give powerful object lessons against vice, promote love of virtue, call forth feelings of patriotism and stimulate national pride. (2) To arouse interest and curiosity; to lead to make individual investigation by means of what has been termed Historical Recreation; to furnish work for the apperceptive powers of pupils; to associate men, deeds, habits, customs, and general conditions by means of the Round Tables.

The Problem of Teaching History.—(1) "It is to introduce several hundreds or thousands of persons, and several hundreds of events, to an age that knows nothing, except by the power of sympathetic or anticipative imagination of men or of things. (2) To make each person introduce an individual and a real character. (3) To show the connection of cause and effect between great events." (Meiklejohn.)

Method.—History in this grade has been treated from the standpoint that history presents an excellent groundwork for some concentration of studies. The minimum time allowance, suggested in Course of Study for history, is one hour per week, but history comes hand in hand with the geography, literature, elocution, composition, dictation, formal reading, spelling, grammar, and through maps with drawing. When the pupil is called upon to write on a certain topic, there is opportunity for capitalization, punctuation, composition, spelling, grammar, and writing. Almost every study of the grade reinforces history, and is, in turn, reinforced by history.

The work of the grade laid down in the Course of Study has been divided into four parts; one part of work for each month, and a general review for the fifth month. The first month's work is a vague whole of the entire term's work, being the discovery, exploration, conquest and settlement of portions of North America and South America. The fifth month's work, when finished, should present a complete whole, details having been worked in all along with history proper, and the inter-relation of other studies of the grade.

In Historical Recreation, the questions of suggestions are put by the teacher some days previous. The pupil at his leisure looks up the necessary information independently, and at a certain time, appointed by the teacher, the members of the class write results as found by each.

The Round Table, which can be used in a most interesting manner, follows each period in history. The pupils are called upon to imagine representative men of a certain period sitting around a table. Each pupil selects one and talks for him on subjects suitable to the time and place in which he lived. Pages might be written, if time permitted, on the possibilities and results of this method.

Literature stamps indelibly the memory of French and Indian Wars by the Story of Evangeline, The Last of the Mohicans, Story of King Philip, stories from Parkman's Pioneers, Hildreth's History of the United States, Palfrey's New England, and other works. Elocution finds plenty of subject matter, based on this period in our history, in the poetry and prose of Whittier, Longfellow and Everett, but only in dictation exercises has such been shown in class work.

Many names of places have a historic interest, and are generally treated as topics for recitation. Historic sayings of the wise, great or heroic, also afford subjects for topical recitations.

Geography is so closely interwoven with history that no lesson is complete without map references.

Much European history is incidentally taught from 1492-1776 by means of the Round Table. Dates have been used as the pegs to support association. Pictures, whenever available, have been used to attract pupils and to deepen impressions made by narrative.

In the establishment of the South American Nations Portuguese, Spanish and colonial South America are treated. This gives an opportunity for establishing a bond between the far off times of discovery, exploration, conquest and settlement and the present time.

Mary A. Conlon, Class Teacher P. S. No. 60.

SIXTH YEAR—FIRST HALF.

In teaching history, the topical method, followed by ample discussion, has been largely employed.

Correlation with reading has been effected by reading stories relating to the grade work, in class and at home. Special topics have been assigned to various pupils for reading and subsequent class discussion. Many of the pupils have had access to outside libraries, and books of reference have been placed at the disposal of the class.

Use has been made of the blackboard for the drawing of maps in colors for the purpose of illustrating, in their order, discoveries, explorations, territory, plans of campaign, and plans of battle.

Map-drawing by the class, with locations and tracings, progressing with the study, has been done.

The object of teaching history has not been so much the study of dates and other abstract points as forces and conditions, and the results which they have caused.

Briefly arranged, the objects have been :—I. The cultivation of the reasoning power. This has been accomplished by making geography the foundation of history. At the start the pupils have been placed in the positions of the European explorers. Knowing the conditions which compelled search for land, they have started out on discovery and have learned how waterways have aided them in explorations which otherwise would have been impossible. Later, they have seen how climate, navigable waters, good harbors, fertile soil, mineral wealth, water-power, forests, useful animals, and other natural resources, have determined colonization. In short, they have been lead to reason that any place, in order to attract a people who shall form a settlement and so lay a foundation for subsequent history, must have those natural advantages which shall support them.

They have observed the boundaries of nations and learned that some geographical feature, such as a mountain range, which makes invasion perilous and defence easy ; a river, which makes a boundary dispute impossible, and along which defences upon which naturally strong sites can be erected ; or climatic conditions, affecting pursuits or tastes, determines their confines.

In the study of campaigns they have continued this kind of thought and found why physical features determined locations and why campaigns were directed against certain points and not against others.

Another means has been in discriminations by comparisons of events and conditions elsewhere, noting similarities and dissimilarities in climate, modes of government, periods, and motives, with their causes and effects. This has been employed in the case of Spanish South America when treated with Portuguese South

America and with North America, and it has been broadened so that it covers the governments and existing conditions in those countries.

II. The lesson of history—how the present has resulted from the past, and how the future will result from the present. The method explaining how the present has resulted from the past has been shown in the above paragraph. How the future will be determined from the present has been improved as a means of inspiring patriotism.

This has been accomplished principally by comparison of the motives in settlement and subsequent government as employed by England, France and Spain. Love of country lies neither in the hatred of a foreign power nor in blindness to our own errors. For this reason contrasts have been careful but applications positive. The Cuban war, fresh in the minds of the class, has been associated as a means of giving reality to similar conditions centuries old.

III. Truth in matters of history and accurate judgments concerning them.

In the treatment of events, it has been the plan to present fully but briefly both sides of important questions. As a result, the judgments formed concerning the Colonial war, the wars for South American independence, and the Mexican war, have been unbiased, yet are first opinions and universally just.

IV. The last important object has been to secure general information regarding the past so that it shall no longer remain an unknown from which no pleasure may be wrung. This has resulted incidentally while securing the more salient points and has been fixed in the memory by dictation, for purposes of study and reference, of tabulated statements at the conclusion of each important subdivision.

A scrap-book having contributions from the class upon current history and supplemental information relative to the grade work has been found of much value in inducing search and arousing interest.

Many ways of error-correction have suggested themselves, but a single example will illustrate the one used with most satisfactory results. The corrected statement has been written in this form upon the blackboard:

"Jamestown was settled in 1600 SEVEN."

A few oral, followed by a few written repetitions of this have in most instances been sufficient. It appears that sight, hearing and attention are appealed to by this device. The same scheme has been applied in making corrections regarding names and occurrences.

The dates only of important events and those having subsequent history dependent upon them have been most dwelt upon and memorized by thorough drill. Other dates have been simply comparative thus avoiding confusion.

Adelbert B. Hunt, Class Teacher, P. S. No. 8.

SIXTH YEAR—SECOND HALF.

The outline in history for grade 6 B, as given in the course of study, covers the time from the end of the French and Indian War, through the American Revolution, the "critical period" from 1783 to 1788 following, and the administrations of Washington, John Adams, Jefferson, and Madison to the end of the War of 1812.

In this class, the practice has been—to review enough of the preceding grade to show the relative position, strength, and importance of the different peoples inhabiting this continent; their intercourse with one another and their conflicting interests, in order that the reasons for their parts in the conflict to follow may be clearly understood.

Following this a brief sketch of English government at home and in relation to the colonies is undertaken and particular emphasis laid upon the prevailing ideas of the time, that colonies merely existed, for the aggrandisement and enrichment of the empire. The narrow commercial policy which resulted from this notion was directly the cause of, if not the occasion for the Revolution.

Next are considered the various issues along this line which were an outcome of the preceding conflict. Beginning with the attempts to enforce commercial restrictions and raise a revenue among the colonies to replenish the depleted treasury of England, the class is led to further efforts of the British government to exert a supreme authority in America; and finally those acts of retribution and retaliation which eventually precipitated the conflict. The fact that the war was caused by an accumulation of grievances is thoroughly dwelt upon.

In studying the beginnings, the process by which all the colonies were brought to act more or less in concert, is given in the natural sequence of cause and effect.

The campaigns are treated first as wholes, as aiming at a particular end to be gained, and then in parts, the various engagements being studied somewhat in detail, showing the positions of the combatants, the tactics employed and the reasons for success or failure. The moral effect on both soldiers and people and the general effect on the campaign are also noted.

In the study of the "critical period," the boundaries of the new country as adjusted by the treaty are carefully taken up, then the condition of the people, the animosity between the states, the drifting toward anarchy and lawlessness, and finally those acts of violence which showed clearly the need for a strong central government.

Next are considered the Federal Convention and its proceedings (very generally), the Constitution and its ratification by the States, the election of Washington and the establishment of the new government. The attempt is made to treat these matters in such a way as to show why a republic was decided upon.

In studying the various events of the Administration, the relation of cause to effect is aimed at, the effort being to have the pupil see why and how one thing naturally brought about another; how the necessity compelled the activity and shaped the result.

In the War of 1812, the causes are first clearly set forth; then the campaigns and engagements are treated, and finally the outcome and the reasons for it.

Thoughout all the work, the human element is emphasized, the pupils being led to understand that men acted in previous times much the same as we should act under similiar circumstances. Enough detail is given intermingled with anecdote and story, to make the study realistic; and the pupils are encouraged to supplement the text-book with reading-matter from the class library.

The general method has been to first furnish the pupils with an outline of the work to be covered and to assign lessons from the text in conformity with this, and then to lead them by conversations to discover the reasons and think out the results.

A part of the time each week is given to this oral instruction and at the end of the week a written exercise is required of each pupil. In this he attempts to show what he has gathered from the oral work, his reading and the text-book.

Maps and pictures are freely used to illustrate the work, the former being drawn upon the blackboard and copied by the pupil. Upon those maps are indicated the movements of the opposing forces; and brief statements are made of events which have made certain places and localities noted. The pictures are gathered from many sources and are distributed in the class for inspection or they are placed where all may see them.

As far as possible, the influence of topography, climate, and graphical position, are correlated as causes aiding or preventing certain results; and the life and occupations of the people, as so related, are considered for the same purpose.

Much attention is given to the cultivation of the faculties for balancing right and wrong and the development of the reasoning powers, in which lie the chief value of history. Finally, to sum up and aid in leaving a lasting impression, the principal events are memorized in chronological order.

The correction of the written exercises is done by the pupils themselves with the assistance of the teacher.

Wm. A. Chatfield, Class Teacher, P. S. No. 8.

SIXTH YEAR—SECOND HALF.

The work in history for the second half of the sixth year covers the period between the revolt of the American Colonies against England, and the close of the War of 1812; including the Administrations of George Washington, John Adams, Thomas Jefferson and James Madison. It also covers the contemporaneous history of England, France and Spain, especially as influencing events on this side of the Atlantic during these periods; and the organization and form of government of the United States.

Results were obtained in this manner. The lessons having been carefully assigned, studied, and discussed, the pupils were questioned with a view to bringing out the important points.

Questions were then written upon the blackboard, the pupils answering them to the best of their ability, illustrating by pictures wherever they saw fit, and drawing maps to show great campaigns or to locate the places where important battles were fought.

The illustration by pictures is, in some cases, the work of the pupil's imagination, but more often copies of pictures obtained from various sources.

By teaching history we hope to implant and foster the love of country—in a word, to help our children grow into patriotic citizens. By studying the lives of our great and noble men, we hope to inculcate a desire to do great and worthy deeds. We try to show that one ignoble act of those in power may change the fate of nations, and generations of people.

The term's work has been divided into nineteen parts, each part comprising the work of three lessons given during one week of the term.

The correlation of various subjects with the one especially considered, is inevitable as well as helpful, in the teaching of history. In the map work, the twin subjects, history and geography, are drawn even more closely together, giving the children an accurate idea of the geography of the United States, and of routes of travel by land and by sea.

Henrietta Fishblatt, Class Teacher, P S. No. 93.

SEVENTH YEAR—FIRST HALF.

COURSE OF STUDY.—History of the United States from the close of the War of 1812 through the Civil War. Constitution of the United States; incidentally, comparisons of the National Government with the State Government and with Government of England.

In teaching the history of this grade, the events which naturally fall together are grouped, so that, in place of having a catalogue of disconnected facts, we have a recital of events, in which one causes or leads to the other. For instance, I would explain the object of a Tariff, then the Tariff law, and show how the latter caused the Nullification Trouble, and how the Nullification Trouble was settled by the Compromise of 1833.

By a judicious mingling of oral and book work, I find that very excellent results are obtained. When a lesson is assigned, it is briefly explained so that the child will have some idea of what the topic is about, when he goes to his home and uses his text-book. The next day, he tells what he has learned, being assisted and corrected by the class and myself. Then I bring out by appropriate questions and illustrations, the relation between this and other events which follow, having previously explained the event or events which led to the lesson of the day.

Occasionally, I give out for home work a question which none can answer without investigation, and offer, as an incentive, a perfect mark to the one who brings in the correct answer. This leads to a discussion of the question among the children, and causes them to look up other histories which many of them happen to have at home.

From the study of history in Grade 7A the children see that there are two sides to every question, and that ultimately the right triumphs over the wrong. They learn that the good God does not suffer the oppressed to be wronged always. The minds of the young are enriched by the precious lessons of patriotism. The judgment is developed, for it is necessary to use the reasoning powers to understand the history taught in this grade. In short, the lessons and warnings learned from the lives and actions of the men of the period, cannot be overestimated.

P. F. O'Shea, Class Teacher P. S. No. 23.

SEVENTH YEAR—FIRST HALF.

The course of study outlined for the Seventh year, First half, includes, 1 st—The history of the United States from the close of the War of 1812 through the Civil War. 2nd—The Constitution of the United States. 3d—Comparisons of the National Government with the State Government and with the Government of England.

The period beginning in 1815, and ending in 1865 witnessed the wonderful westward expansion of the United States and the consequent disputes with regard to the extension of slavery. These disputes, together with quarrels arising from the widely different economic conditions of the North and the South, eventually led to Civil War and to the establishment of the Union on a firmer and more enduring basis. Thus the Civil War is the culmination of the events of this period, which are to be considered in their relation to this great struggle.

In dealing with this period, it has been my aim not to reduce the study to a mere chronology, but to present it as a story of the growth of the nation in intelligence, wealth, population and area, and to show the relation of cause and effect as exhibited in the events of these years.

Naturally, a course in history could not be pursued without utilizing the student's knowledge of geography; and skill is developed in sketching and preparing the various maps required to illustrate different passages of history.

Having selected a topic such as Secession, the subject is discussed and explained in the class room, and is given as a lesson. The pupil then makes researches in his text-books and gathers information from any other available source, after which the matter is discussed with the teacher. Then an essay is written on the subject. These are continued throughout the term.

I have occasionally treated the subject from a biographical standpoint. The lives of Andrew Jackson, Abraham Lincoln, and others, are useful as histories of their times and interesting withal.

Thomas S. Constantine, Class Teacher P. S. No. 154.

SEVENTH YEAR—SECOND HALF.

Course of Study.—1. History of the United States since the Civil War. 2. Selected Topics. 3. Civil Government. 4. Recent European and Asiatic History. 5. Aristocratic Governments.

Length of Term.—Twenty weeks; minimum time allowed per week, one hour; time used by grade teacher, one and a half hours, divided into three periods of thirty minutes each.

Treatment of Subject.—Home study or original research assigned for each period; short talks by teacher; recitations both oral and written with blackboard analysis and map-drawing as accessories.

History of the U. S. Since the Civil War.—Under this head each administration is taken up and treated in chronological order. A topical analysis is made by the teacher and placed upon the blackboard. Then the salient features of the administration are selected, and their relation to, and connection with, previous or later administrations and particularly with current topics or events deduced by questioning. Correlation with English is sought in the literary expression obtained in both oral and written work, grammatical English being insisted upon and answers required to consist of full and complete thought sentences. Wherever and whenever possible, correlation with geography and co-ordination with European—especially English—history are sought and obtained. Intensive study of any particular topic is not attempted. Time devoted, seven weeks.

Selected Topics in American History.—This is probably the most important of the term's work, and as it is to be studied intensively, rather than extensively, three or four main topics effecting either the past or the present of the body politis, are selected. The subject is taken up topically with blackboard analysis and lectures by the teacher; and, besides the use of class text-books, the teacher's reference-books, and class and other libraries are resorted to for information. Special attention is paid to the causes, the arguments advanced for and against the subject, the prominent men connected therewith, with their mistakes and failures serving as suggestive warnings, and the results. The pupils are taught to assemble a mass of historical material obtained largely by original research, to select only the essential and reject the immaterial and then to form their own generalizations. In this manner, judgment, the main aim of history and invaluable as a mental stimulus, is obtained and strengthened, and the pupil prepared for the methods in vogue in the higher education of the high school and college. Time devoted, six weeks,

CIVIL GOVERNMENT:—The intensive study of Civil Government being reserved for the high school and the college, the object of the elementary school is to give an insight into the workings of the City, State and National governments so as to prepare the future citizen to exercise intelligently his rights and duties as a member of the community. The work largely devolves upon and is developed by the teacher from blackboard analysis, the text-books furnished being used merely as collateral reading. The machinery of the State government is studied by comparing it with the National government, resemblances and differences being drawn from the pupils. The local government is taught as an object lesson by calling the pupil's attention to the systems and manners of voting at the polls whenever elections occur. Civil government is coördinated at all times with History. Time devoted three weeks.

RECENT EUROPEAN AND ASIATIC HISTORY:—As this subject is given without text books it will necessarily be by means of short talks by the teacher with note-taking by the pupils and from blackboard analysis. The word "recent" has such an elastic interpretation, and the time for the treatment of the subject is so short, that I take it to mean what has occurred within the past ten or fifteen years, and then only such movements as may have been national in character and materially effected these continents. Current events form a most essential part of this topic. Time devoted three weeks.

FORMS OF ARISTOCRATIC GOVERNMENTS:—Aristocratic governments or governments where the power, conferred by wealth or heredity, is vested in a privileged few, in our age are few and as they teach us no lesson except possibly to beware of such forms in our future history, a study of them seems of little value. The Boer Republic of Transvaal is probably the only government of this kind now in existence, and beyond a cursory glance at the aristocratic governments of ancient history and this 19th century aristocracy, the time is devoted to a study of the Nicolai Affair and Johnson's apparent attempt to found such a government immediately following our Civil War. Time devoted one week.

Elijah Jenks, Class Teacher, P. S. No. 154

SEVENTH YEAR—SECOND HALF.

The Course prescribed for the study of this grade is as follows: I. Review, selected topics. II. History of United States since the Civil War. III. Brief summary of the recent history of European and Asiatic nations. IV. Civil Government. V. Forms of Aristocratic Government.

The subjects chosen for review are those which have the most important bearing on affairs of the present day and whose results may reach into the future. Among these may be taken the Monroe Doctrine, Tariff question, and Slavery disputes, culminating in the Civil War. The administrations have been taken up in regular order, the events analyzed and their relative importance considered together with the territorial and material growth of the country. That the pupils may receive a clear idea of the relations, political and social, of foreign nations, the summary includes the founding of the French Republic, the unification of.the German Empire, the triple alliance and the partition of China, and the seizure of African territory.

Civil government includes the forms of government, relation of State and National government, study of the Constitution, laws governing elections, and the various divisions of the municipal government. In teaching aristocratic governments, accounts have been given of the most prominent aristocracies of both ancient and modern times.

Two or three days before giving the lesson, an outline of the subject to be studied is placed on the blackboard and also names of books in the class library containing reference to the topic, together with the title of any well known poem or short story relating to it. The pupils are required to consult the histories and biographical dictionary belonging to the class, and they are encouraged to collect from magazines and newspapers, articles and pictures illustrative of the subject. Each child receives a slip of paper on which to write some interesting fact gathered from her reading.

When giving the lesson, each point in the topical outline is taken separately, explained and elaborated: words whose significance is not fully understood are analyzed and their meaning shown. Next the items collected by the pupils are read and discussed. The judgment of the children is then tested as to the relative importance of the different items. When the lesson is thoroughly understood, a copy of the analysis is made in the note books for future reference and study.

The pupils become interested in the study of History and take great pride in collecting information of value to the class. Memory is assisted by the association of this subject with the others of the grade. History is closely correlated with geography and literature and the pupil's language is much improved by consulting and studying good authors.

Grace E. Grannatt, Class Teacher, P. S. No. 53.

Arithmetic.

INTRODUCTION.

WHAT IS IMPORTANT IN PRIMARY ARITHMETIC? *

Amos W. Farnshaw, Teacher of Number Methods in the Oswego State Normal and Training School.

1. *That which gives clear concepts of the function of number, important in Primary Arithmetic.*

The *how many* of the unit of measure is Number.

Any quantity used as a standard of reference is a unit of easure.

A unit of measure, to be of practical use in society, must have fixed quantitative value known and appreciated by all who use it. at a garden is twenty-five paces long and fifteen paces wide, gives ly approximate knowledge of the dimensions of the garden, because e unit of measure, *one pace*, has not a fixed quantitative value, but determined each time by the judgment of the person using it. at a garden is twenty-five yards long, and fifteen yards wide, ves data for a definite knowledge of the area of the garden, since e unit of measure, *one yard*, has a fixed quantitative value.

A knowledge of any material object or of any commercial nsaction, cannot be gained without the aid of Number. Unmeased quantities (*lines*, *surfaces*, *solids*, *angles*, *weight*, *time*, *pecuary value*, *etc.*), become known only by comparing them with rtain fixed units of measure. The result of each comparison is a tio,—result of a measured quantity to a (related) unit of measure. surface and a surface only, is the measure of surface ; weight and ight only, is the measure of weight ; etc.) Every ratio is pressed by a number.

The function of number is to express the ratio of a measured antity to a related unit of measure.

II. *That which gives clear concepts of exact measurement, is portant in Primary Arithmetic.*

Arithmetic has been called the science of exact measurement.

Measurement implies—(1). Something to be measured. (2). cessity for measurement. (3). A unit of measure.

Two elements enter into exact measurement: The numerical d the quantitative. Each element is expressed in every unit of measure. For example, *one quart* (of cherries): The quantitative element is expressed by the quantity, *quart*, and the numerical element by the number, *one*.

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* This paper was written for New York Teachers' Monograph.

Clear concepts of exact measurement are based on a definite knowledge of standard units, namely: *gallon*, *bushel*, *yard*, *pound*, *day*, etc.; and of units derived from standard units, such as *quart*, *peck*, *foot*, *ounce*, *hour*, etc. These units should be used in problems in which it is apparent that something is to be measured, and that there is a necessity for exact measurement.

No definite knowledge can be gained from the use of indefinite units of measure, such as *cupful*, *handful*, *piece*, *load*, *moment*, etc. The *measure* of a pie or an apple is an unfortunate *quantity* to be considered in Primary Arithmetic.

The question: "How many are four and five?" has some value, but its value is increased when a quantitative element is introduced: "How many are four pounds and five pounds?" The value of the question is still greater when the measuring elements are used to determine the *how much* of a given material: "How many are four pounds of raisins and five pounds of raisins?" The question reaches its greatest value when it is incorporated in a practical business problem: "Mr. Worts, the baker, used four pounds of raisins on Monday and five pounds on Tuesday. How many pounds of raisins did he use in the two days?"

III. *That which awakens interest in the use of numbers is important in Primary Arithmetic.*

There must be something definitely stated and something definite to find out, to awaken interest in the use of Numbers. Given the problem (provided it may be called a problem), "If a boy had thirteen cents, and should give away five, how many cents would he have left?" the conditions of the problem are hypothetically stated. The boy (what boy is not known) may not have had thirteen cents, and may not have given five away. Nor is any reason made known for his possible generosity. Nothing is definitely stated, and nothing definite can be found out. And yet such problems are common in Primary Arithmetics. Take the same number fact (thirteen cents less five cents equal eight cents), and re-cast the problem so that it will say: "Neil had thirteen cents, and gave five to his little brother to buy an orange. How many cents had he then?" It is apparent that the second wording commands more interest than the first wording.

Again, "Suppose I have fifty dollars, and give thirty dollars for a suit of clothes. How many dollars do I have left?" First, this is a *supposed* case. Second, each verb asserts present action, which could not be true in a real business affair. Let the problem have the ring of genuineness, then note the effect: "I had fifty dollars, and gave thirty dollars for a suit of clothes. How much money did I then have left?"

Problems are often introduced by the words: "What will be?" "What would be?" etc. "If," "Suppose," "What would be?" and other hypothetical, suppositional, and conditional expressions which deprive Primary Arithmetic of its virtue. There is a place for fiction, but its place is not in Primary Arithmetic.

IV. *That which gives skill in the use of number is important in Primary Arithmetic.*

When the child has gained a fair degree of accuracy and celerity *in the use of number*, he may be considered skilled. But too often he is not *skilled*, because he is not ready in *the use* of Number. His work has been in the abstract. He has dealt with numerical elements almost to the exclusion of quantitative elements. And when quantitative elements have been used, there has been so little (if any) application in his "drill" work, that the office of Number has been overlooked. The following illustrates helpful "drill" work:

How much will seven quarts of cherries cost at four cents a quart? at seven cents a quart? at nine cents? at five cents? eight cents? six cents?

What is the cost of six bananas at twenty cents per dozen? What is the cost of nine bananas? of three bananas?

The legal interest on one hundred dollars for one year (in New York State) is six dollars. What is the interest on four hundred dollars? six hundred dollars? eight hundred dollars? five hundred dollars? seven hundred dollars? nine hundred dollars? fifty dollars? seventy-five dollars? twenty-five dollars? three hundred and fifty dollars? two hundred twenty-five dollars? three hundred seventy-five dollars?

Reverse the work for "drill" on division.

V. *That which cultivates a sense of "the fitness of things" is important in Primary Arithmetic.*

Authors put into primary arithmetics such problems as the following:

1. "How much will two and one-fifth yards of ribbon cost at fifteen cents per yard?"

2. "I bought one-seventh of a pound of candy at twenty cents a pound. How much did my purchase cost me?"

3. "From a can containing five gallons of milk, two and one-third gallons were used. How much milk remained in the can?"

4. "When strawberries were selling for two and five-ninth dollars per crate, how much did Mr. Grant receive for nine crates of strawberries?"

In the foregoing problems the author has no regard for the different scales of denominate numbers. With our measures it is impossible to measure *one-fifth yard*, *one-seventh pound* and *one-*

third gallon. Nor do we set such prices as *five-ninth dollars.* Such problems furnish good fraction "drill," but they do violence to the sense of "the fitness of measures."

Again: "Mr. Bingham took twenty bags of wheat to market. Each bag held three bushels. How many bushels did his load contain?" This problem has its air of reasonableness. But a moment's thought tells us that a grain bag holds only two and one-half bushels instead of three bushels. And only two bushels of wheat are usually put into one bag, because of its superior weight—one hundred twenty pounds being all one man can well handle. Granted that each bag held three bushels, then twenty bags held sixty bushels. One bushel of wheat weighs sixty pounds. Sixty bushels weigh three thousand six hundred pounds,—a larger load than the average team is able to draw on an ordinary country road.

VI. *That which keeps pace with the child's intellectual development is important in Primary Arithmetic.*

In Primary Arithmetic (and in higher grades as well) only number facts seem to be considered. The language of the problems does not always conform to grammatical rules, and rhetorical errors are not infrequent. The material to which number facts are applied is often beyond the child's comprehension. Unfamiliar and difficult words which obscure the thought are introduced. Problems occur that involve too large numbers, and two or more answers before the child is able to determine one answer with ease. Problems should begin with the child's environment, and deal with material that is familiar and of interest to him. Then as his horizon enlarges, his problems may deal with material more remote; technical terms may be introduced, larger numbers may be used, and the conditions of the problems may be more involved. The language and material, as well as number facts, should be graded to the child's capacity. A more rational use of Numbers would secure better results with less expenditure of nerve power.

VII. *That which cultivates a sense of honor is important in Primary Arithmetic.*

The writer has heard primary teachers use questionable problems in review work, of which the following are illustrations:

"Harold had seventeen marbles, and won five more. How many marbles had he then?"

"Andrew shot five sparrows and three waxwings. How many birds did he kill?"

"Jay had nine cents, and found five more. How much money had he then?"

Primary Arithmetic cannot give formal lessons on Morals, neither can it be correlated successfully with Nature Study; but it can be so taught that it shall not place a stumbling-block in the way of any other subject of instruction.

GRADE 1 A—FIRST YEAR—FIRST HALF.

Scope of work. Adding, subtracting, multiplying, and dividing numbers from one to ten inclusive. Partitive division without a remainder. Fractions ½ of multiples of two. Measures—pint and quart. Money—cent and dime.

The larger aim of this course is to so relate the child to the world of magnitude that he attain to it through his own proper person by natural means. The more immediate aim is to give the child a good working knowledge of numbers through ten before advancing him to a higher grade.

In the study of these numbers the order observed has been as follows:

I.—Perception of the number—Synthesis.

II.—Analysis of the number.

III.—Drill upon facts discovered by analysis.

IV.—Comparison with smaller numbers.

The general scheme in presenting the numbers to the child is

(*a*) Through perception of quantity and number, through the use of objects visible and tactual, through the imagination and the memory.

(*b*) The perception of objects as constant in quantity to introduce grouping.

(*c*) Comparison of quantities, combinations of numbers.

(*d*) Recognition of symbols presented orally through the concrete, problems in form of story—child answering orally then using blackboard and finally paper. Lastly, oral and written abstract problems.

The concrete work grows less and the abstract more about the time of the study of the number "6."

The following is a suggestive lesson on the number "4."

	TEACHER'S WORK.	CHILD'S WORK.
Perception of "4" as a whole.	Child given 3 objects and 1 more object. Told he now has 4 objects.	Perception of 4 synthetically from 3, then as a whole.
	Name 4 objects in room.	Table has 4 legs.
	Name animals having 4 feet.	Cat has 4 feet.
	Objects with 4 wheels.	Carriage has 4 wheels.
Presentation.	Child given 4 objects to discover combinations.	3 and 1, 2 and 2, etc.
Reinforcement through new presentation and drill.	Visual drill—Two numbers written on blackboard and erased.	Reproduction of combinations with answer.
	Concrete problem presented in form of domino for one instant only.	Reproduction on blackboard in the exact color and position of spots as they appeared on domino. Problem also written in figures.
	Four objects presented.	Eyes closed.
	Certain objects hidden.	Eyes opened.
	Tell number of objects hidden.	Answer.

Comparison with smaller numbers.	Would you rather have 3 candies or 4? Why? Would you rather take 3 spoonfuls of medicine or 4? Why?	4 is more than 3. 3 is less than 4.
Motor drill.	Make dominoes telling all stories about 4.	

This work is correlated with the language work of the grade to a very large extent, and less directly with nature study.

Special points taken up throughout the term.

The idea of more or less is introduced as soon as the child reaches number "3." When numbers through "5" have been studied, pint and quart are taken up as the first exact quantitative measurement. The minus sign (without name) is also introduced about this time, the sign being easier for the child than the written expression. The plus sign is not used as the child is able to express the written work in addition without its aid. After the mastery of the number "6" some tabular forms of expression are presented.

When the child is able to read and write numbers correctly to 7, dictation of figures is begun. Numbers above "6" are taught through the grouping of those already familiar to the child as (3 and 4) 7 and 1 more. With the study of "8," the idea of one-half is taught through partition of wholes. About this time also the idea of multiplication is brought out, the child using the sign X which he calls "times." Written problems in partitive division are not given until the study of the number "10." The dime is also taken up in connection with 10.

Method of correcting errors—In the abstract problems, the child is given the concrete by which to correct his own errors.

Ellen M. Phillips, *P. S. No.* 58.

FIRST YEAR—SECOND HALF.

1. Splints and other objects. Inch, foot, yard, dozen, dollars ¼ dollar, ½ dollar.

Reading and writing numbers: Through two places.

ORAL AND WRITTEN.

2. Adding, subtracting, multiplying and dividing numbers to and including 20; no remainder in division.

Fractions: ½ and ¼ of multiples of 2 and 4, respectively.

New facts presented in the concrete using familiar objects that tend to excite attention and interest.

The child draws on her previous knowledge in forming a new combination of numbers whenever practicable.

Number work is correlated with language to that extent that the children are required to express their thoughts of the numbers in correct English.

Number work is frequently correlated with observation and nature study.

Children will tell of animate and inanimate nature in their number stories.

Abstract number is used as a rapid drill to fix the particular combination in the mind.

Practical problems in the use of money; value of fractions applied to familiar objects are carefully considered.

Rachel Cohen, Class Teacher, P. S. No. 13.

SECOND YEAR—FIRST HALF.

Addition: The sum of addends not to exceed 100.

Subtraction: Finding the difference between numbers below 100.

Multiplication: Products not to exceed 100.

Division: Dividends not to exceed 100, the divisor not to exceed 6; no carrying, no remainder.

Fractions: $\frac{1}{2}$, $\frac{1}{3}$ and $\frac{1}{4}$ of multiplies of 2, 3 and 4, respectively.

METHODS OF INSTRUCTION:—Numbers are dealt with analytically as concrete wholes. A great variety of common objects are used and the child soon learns that anything tangible can be counted, and is thus enabled to free the mind from entire dependence upon concrete objects, and may proceed to the abstract with some understanding.

The combinations for addition are taught, first concretely and then abstractly for rapidity and accuracy.

The simple ones are learned and then the more difficult ones. Those above nineteen are taught in decades. As, $9 + 8 - 17$ being known, $19 + 8 = 27$ can be easily learned; and the child will soon recognize the fact, that the unit figure remains the same, and only the tens or hundreds place changes, or as far as one desires to carry it on. He will be able to discover the answers to the higher decades himself if he has the initial step firmly fixed in his mind.

METHODS OF PRESENTATION.

Number work is presented concretely until pupils are able to deal with it abstractly. Practical examples are used, and can be made interesting language lessons. They lead the child to think and reason for himself. In giving explanations he must find words in which to express his meaning.

METHODS OF DEVELOPMENT.

Proceed from the known to the unknown. Following this maxim, previous knowledge is recalled and is made the basis for acquiring new knowledge.

Subtraction, multiplication, and division are developed concretely as far as practicable. The difficulties of each case are pointed out and explained until made perfectly clear to the pupils. As in subtraction, it is impossible to take away more than one has.

For fractions relations and comparisons must be considered.

Multiplication is shown as a short method of adding.

Division is a cutting or dividing of wholes. Here relation of parts to each other and to the whole may be considered.

CORRELATION.

Arithmetic may be correlated with Nature, by the use of practical examples; with Drawing, by the formation of symmetrical figures, and spacing and arrangement of work; with Language, by the repetition and explanations of practical work given orally, by leading the pupil to discover every fact, process, and generalization for himself and then to state what he has discovered in concise language.

Annie E. Gibbs, *Class Teacher*, *P. S. No.* 62.

SECOND YEAR.—SECOND HALF.

OUTLINE OF GRADE WORK.

Gill, pint, quart, gallon, square inch, square foot.

ORAL.

Adding, subtracting, multiplying and dividing numbers to and including 50; neither multiplier nor divisor to exceed 10; no carrying in multiplication or division, but there may be a remainder in division.

Fractions: $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$ of multiples of 2, 3, 4, 5 respectively.

WRITTEN.

Addition: The sum of addends not to exceed 1,000.

Subtraction: The difference between numbers below 1,000.

Multiplication: Products shall not exceed 1,000.

Division: Dividend not to exceed 1,000, divisor not to exceed 10, no carrying, but there may be a remainder.

Fractions: $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$ and $\frac{1}{5}$ of multiples of 2, 3, 4 and 5 respectively.

The new addition, subtraction, multiplication and division tables are developed one statement at a time, before being placed upon the blackboard. If 7 x 6 = 42 is the statement to be taught, the children are shown seven groups of six articles each, or they place seven 6's in a column and add them until they see that multiplication is a short method of addition. Division may, in a similar way, be shown to be a short method of subtraction. A free use is made of small objects in all this introductory work. The written work is based upon and follows the teaching of the tables and the oral work. Mental problems involving smaller numbers precede written questions with larger numbers.

All measures used are taught by actual measurement of various substances.

Fractions $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$ and $\frac{1}{5}$ are shown by the division of a whole into the various parts. Circular or spherical objects are employed for this purpose, as they show the incompleteness of a fractional part more clearly than other shapes.

Arithmetic may be connected with Nature Study by asking such questions as "How many petals are there in 45 apple blossoms?" "How many horses would be needed to wear 80 horseshoes?"

Arithmetic is also made a language lesson as pupils give explanation of their work and occasionally form their own problems. The teacher sometimes places upon the blackboard several numbers followed by a sign and a single number, as: 49, 84, 67, 35 — 8. The pupil is then expected to select a number and give a complete and original statement corresponding with the sign used, *e. g.* "There were 49 birds on the tree, 8 flew away. There are 41 birds left." The sign and last number are frequently and quietly changed by the teacher and the children alter their statements accordingly.

Emma Edwards, *Class Teacher*, *P. S. No.* 69.

THIRD YEAR—FIRST HALF.

Addition: The sum of addends not to exceed 10,000; number of addends not to exceed 6; $ and cts.

Subtraction: The difference between numbers below 10,000; $ and cts.

Multiplication: Products not to exceed 10,000; $ or cts.

Division: Dividends not to exceed 10,000, the divisor not to exceed 10; with carrying and remainder; dividend $ or cts.

Very simple written exercises in adding, subtracting and multiplying amounts in Federal money.

Fractions: ⅔, ⅖ of multiples of 3 and 5, respectively.

Review of preceding grades.

In all the arithmetic of the Third Year, First Half, each new lesson is introduced by definite concrete work combined with mental work and followed by board and desk work.

Board work is conducted in the following manner: As many children as may be accommodated are sent to the board, while the others observe and after work is finished, indicate or correct errors. At this and all other times, the children are encouraged to ask questions relative to any part of the lesson they do not understand.

A list of deficient children is kept, errors noted beside their names and a thorough explanatory drill given on weak points.

Usually when at desk work one of these deficient children is called upon to read his answer. He is then sent to the board to explain. This guards against mechanical routine and if the child is timid helps to give him self-reliance.

This method is continued throughout the term.

Every Friday there is a weekly written review. All papers are examined and incorrect examples indicated by a mark thus *v*.

Just what the error is, is not shown; that is left for the child to discover as the problem is worked on the board.

Papers are collected, dated and reserved.

After each rule is thoroughly understood, wherever possible, two or more rules are combined in the same example.

As new words occur such as minuend, product, etc., they are written on the board and form a part of the regular spelling lesson of the day.

All corrections in language are made after the child has finished his explanation.

Notation—The notation of this grade is simply a continuation of the work of the second year with the addition of one place.

To overcome difficulties, notation should be taught concretely using bundles and single sticks. This is the only means by which the child can properly understand the relative value of each place in each period, the knowledge of which is absolutely necessary in order to deal intelligently with the work of the grade. For this reason, a rapid review is given using the bundles and single sticks, with much drill in the number of units in one ten, the number of tens in one hundred, etc. The child is led to see that 50, or 75, requires as many places in thousands period, as in units period, and that any place for which nothing is given, nothing is required.

Dry Measure—Materials used are sand, measures and toy-money.

Attention is first directed to the use and size of the quart measure. By actual measurement the child discovers how many quarts make a small measure. This statement he writes on the board while the class write it in books. Questions then follow on the comparative size of the two. What part one is of the other and in connection with this simple mental problems.

Federal Money—The children now buy and sell, using the sand and toy-money and exchanging one for the other. The buyer or seller writes on the board, while the class write on paper, the purchase and the amount of the bill.

Attention is called to correct measurements not only for the intellectual but for the ethical value.

The peck, bushel and cubic inches in a gallon are all treated in the same manner, the class constructing the one inch cubes by which the contents of the gallon is measured.

When handling toy money, the child is led into an orderly arrangement of the bills and coins in the money drawer by first putting all into one or two compartments and then showing how much more quickly change can be made, with the money of different values in different compartments. The money-drawer is simply five boxes so arranged as to represent two places for cents and three places for dollars. As soon as the child thoroughly understands the need of this arrangement, he has been taught the most important step in the writing and reading of dollars and cents. Cents to occupy the first box or compartment, dimes the second; single dollars to occupy the first compartment on the dollars' side, ten dollar bills the second, hundred dollar bills the third.

The class is then tested, as to where they would place certain bills and coins, as $50, $4, 1c., etc., and the first board lesson in writing dollars or cents is simply a test as to the relative value of each place. If the child was told to put 7 in the box representing hundreds of dollars and 1 in the box representing units of dollars, the child would write $701 nothing being given for the second place. Sometimes these boxes are separated by a marble or a nut of some kind to represent the cent point.

After a short time, these little objective helps are put away and only brought forth when needed.

Addition—In addition the child adds all the cents, changes them into dimes and cents, places the cents under cents, adds the dimes to the dimes in the next place. Dimes and dollars are treated in the same manner.

Subtraction—The method used in subtraction is that of taking from one in ten's place, and adding the remainder to the minuend in unit's place. Ten's minuend is now one less. If naught occupies the place in ten's minuend, he takes the unit from one dollar and has left tens and units.

Much drill is given in practical examples; in buying and selling and in finding the difference in the length of days.

MULTIPLICATION.—The first work in multiplication is the building up of the tables. This is done by means of a series of oral questions, so presented that the result or answer given forms a part of the multiplication table and is written in table form.

After the formation of the table, follows a drill on the difficult points. The child is then led to form his own mental questions, reasoning out his answers in his own way. If his way is a good one it is accepted, if not he is corrected and led into another process of reasoning.

When multiplying by numbers ending in naught, the child is taught to separate the naughts from the other numbers by a vertical line indicating that the numbers have been divided by 10 or 100 as the case may be.

The first step in multiplying by two figures, is to analyze the multiplier. If the multiplier is 69, the child first multiplies by 9 and then by 60.

In addition to the practical examples, very simple examples in mensuration are also given.

DIVISION.—If the early exercises in notation, addition, etc., have been thoroughly understood there will be very little trouble in teaching division. Division tables are taught with multiplication tables and in connection with mental work.

Carrying at first is made very simple, beginning with examples where only one figure is to be carried, then two and so on until the child has mastered the work.

Fractions are taught with division. Circles, papers, diagrams, etc. are used to explain and illustrate.

In following out the above methods, it is to be hoped that the desire—to arouse the self activity of the child, and the aim—to impart knowledge by developing the reasoning powers, have to some extent been successful.

Eleanor L. Toner, P. S. No. 137.

THIRD YEAR—SECOND HALF.

Course of Study:—Addition:—The sum of addends not to exceed 100,000; number of addends not to exceed six; $ and cts.

Subtraction: The difference between numbers below 100,000; $ and cts.

Multiplication: Product not to exceed 100,000; $ and cts.

Division: Dividends not to exceed 100,000; $ and cts.; divisor not to exceed 25, with carrying and remainder as a fraction.

We aim to develop mental power and skill by means of examples and problems, which are carefully selected and graded to cover the entire work of the grade. Each new step or new principle is taught to the pupils concretely and inductively.

Oral work precedes daily written work.

A prominent part of the oral work of this grade is a comparison of the various units of measure for the purpose of perceiving relations and the cultivation of the imagination. At first the pupils compare the various units of measure through the help of their senses; afterwards they are required to make comparisons without having the magnitudes before them.

Whenever it is found practical the motor activities are employed; the pupils are asked to draw and make the units of measure and fractional units. Here are a few of the many questions that are given: Compare a yard with a foot, a pint with a quart, a pound with 2 ounces, 2 pecks with a bushel, $\frac{1}{4}$ with $\frac{2}{4}$, etc.

In the written work an effort is made to secure greater rapidity in the four fundamental processes. The following topics receive careful attention. In addition the pupils are required to see the different combinations as wholes instantly. They must see 7 and 8 as 15, 6 and 7 as 13, 8 and 9 as 17, and 7 and 9 as 16, etc. 2. The application of the four fundamental rules to United States money, especially concrete examples involving multiplication and division of United States money. 3. Division where the remainders are treated as *fractions* for the first time in the course.

This topic is presented to the pupils in the following form:

$$\begin{array}{r|ccc} & h & t & u \\ 5) & 7 & 4 & 3 \\ \hline & \multicolumn{3}{c}{148\frac{3}{5}} \end{array}$$

Explanation: One-fifth of 7 hundreds is 1 hundred, with a remainder of 2 hundreds.

2 hundreds = 20 tens. 20 tens and 4 tens are 24 tens. One fifth of 24 tens is 4 tens, with 4 tens as a remainder. 4 tens = 40

units. 40 units and 3 units are 43 units. One-fifth of 43 units is 8 with 3 as a remainder; since 1 unit has $\frac{5}{5}$, 3 units have 3 times $\frac{5}{5}$, that is to say, $\frac{15}{5}$; One-fifth of $\frac{15}{5}$ is $\frac{3}{5}$. Therefore, one-fifth of 743 is $148\frac{3}{5}$.

FOURTH YEAR—FIRST HALF.

In this grade the work in numbers comprises integers to one million; common fractions through nine-tenths and decimal fractions through ninety-nine hundredths.

INTEGERS.—This includes rapid addition and subtraction; multiplication in which the written multiplier may contain three figures and the oral multiplier not exceed the number twelve; and division in which the divisor is not to exceed three places.

When multiplying or dividing dollars and cents by ten, the decimal point is to be removed either to the right or left as the case may be. This is presented by having the child do the actual division and then drawing his attention to the relative positions of the decimal point before and after the division. This is to prepare the child for more advanced work in decimals.

FEDERAL MONEY.—As the children have been previously taught simple problems, using the dollar sign and the decimal point, I now build upon this foundation and combine two or more of the simple rules, thus introducing the form and method of working a bill.

Federal Money in practical application includes the simple cases of "Profit and Loss," the dividing of money by money to find the number of articles, and the compound cases of division and multiplication and double division.

PROBLEMS.—These are of two types: To find what part one number is of another. To find a fractional part of a number. Both are presented objectively or by diagrams drawn on the board. The former includes a reduction that may be easily done by inspection.

FRACTIONS.—In taking up fractions, I have the children cut paper squares, dividing them into equal parts until they understand the meaning of a unit, and that its subdivisions form the fraction. They are now ready to compare fractions and to simplify this comparison we use five series.

The first series comprises halves, fourths and eighths.

The second series comprises thirds and ninths.

The third series comprises fifths and tenths.

The fourth series comprises halves, thirds and sixths.

The fifth series comprises halves, fifths and tenths.

We continue using the scissors and paper to verify these comparisons, or, perhaps, draw diagrams on the board until finally, by inspection, the children are able to add and subtract the fractions of the same series. Mixed numbers may now be introduced and simple problems involving the use of the same.

DECIMAL FRACTIONS.—In the introduction of decimal fractions we combine the child's knowledge of common fractions and Federal Money. Tenths is interchangeable with dimes, hundredths with cents.

DENOMINATE NUMBERS.—The several weights and measures are taught as far as practicable with the use of the measures. The pupils find the units of measurements in the class room, and secondly do the actual measurement for verification.

Simple problems in reduction from one denomination to another may now be introduced.

AIM AND PLAN OF WORK.—As the new always includes the old, my plan, when taking up a new element, is to rapidly review the old and select what will best serve to introduce the new. This work is more or less mental.

Instruction and drills are given on the first four days of the week, when mistakes are carefully noted, that they may be corrected, and that point especially dwelt upon; and the pupils that are particularly backward may have individual supervision.

On Friday a general review of the week's work is given and papers are marked as to correctness of reasoning and mathematical ability.

At the end of every month a more general review is given, embracing the principal features of the month's work.

Laura Morrison, Class Teacher P. S. No. 117.

FOURTH YEAR—SECOND HALF.

A careful comparison of the requirements in Arithmetic for Grades 4 A and 4 B, will show that the work laid down for the latter follows very closely along the lines of work mapped out for the preceding grade,—4 A.

The work called for in 4 B, is really an extension of the work done in 4 A. The *advance* work of 4 B consists almost entirely of work in fractions, both common and decimal.

Grade 4 B continues work in Simple Numbers to 1,000,000; fractions to $\frac{9}{10}$ and .99.

In Denominate Numbers we are to consider the following;——

(1) Federal Money; (2) time measure; (3) dry measure (pt., qt., s. m., pk., bu.); (4) liquid measure (gi., pt., qt., gal.); (5) measures of weight (oz., lb., ton.); (6) linear measure (in., ft., yd., mi.)

In the "Relation of Numbers," the Course calls for practice in the four rules; combination of two or more rules, multiplication and division by moving the decimal point is extended to 100; (by 10 was taught in 4 A.)

Children are to be taught to find part of a number; and also, to find what part one number is of another.

"Comparison of units of measurement" is called for; compare, for example, pint with quart, etc.

When we come to Fractions, the Course calls for reduction of fractions by inspection; adding, subtracting and multiplying easy common and decimal fractions, and mixed numbers: multipliers to be integers; combine addition and subtraction; find part of a fraction, common or decimal.

Children are to make actual measurements as far as practicable by the denominate units of the grade. Give simple problems involving the use of these denominate units; also problems involving the use of two or more rules in Federal Money; teach aliquot parts of a dollar, as halves, quarters, fifths, tenths; and, lastly, the making of bills is to be taught.

The above statements outline the course to be pursued in this grade,—4 B.

After careful consideration, I have divided the work into the following method units.

I.—(*a*)—Combinations of simple rules. (*b*) Combinations of simple rules, involving the use of Federal Money.

II.—Multiplication and Division by 10 and by 100 by moving the decimal point.

III.—(*a*)—To find part of a number. (*b*) To find what part one number is of another.

IV.—Reduction of fractions. (*a*) Whole and mixed numbers to improper fractions, and vice-versâ. (*b*) To higher terms. (*c*) To lower terms. (Make use here of the "fractions in series" taught in 4 A).

V.—Adding fractions.

VI.—Subtracting fractions.

VII.—Multiplying fractions and mixed numbers by integers.

VIII.—To find part of a fraction (common and decimal.)

As an illustration of the methods pursued in presenting the work, I shall work out in full one or two of the above named "method units."

(1). To multiply a mixed number by an integer.

The children are familiar, by this time, with all the terms used, as integer, proper fraction, mixed number, etc.

They have also been taught to multiply a *fraction* by an integer.

Problem.—To multiply $6\frac{1}{2}$ by 5. (1st method.)

$$\begin{array}{rr} 5 \times 6 = & 30 \\ 5 \times \frac{1}{2} = & \frac{5}{2} \text{ or } 2\frac{1}{2} \\ \hline \text{Adding,—}5 \times 6\frac{1}{2} = & 32\frac{1}{2} \end{array}$$

Simpler way of expressing the work,—

$$\begin{array}{r} 6\frac{1}{2} \\ 5 \\ \hline 2\frac{1}{2} \\ 30 \\ \hline 32\frac{1}{2} \end{array}$$

2nd. method. Reduce the mixed number to an improper fraction,—then proceed as in multiplication of fractions.

$$6\tfrac{1}{2} \text{ x } 5$$

$$6\tfrac{1}{2} = \tfrac{13}{2} \qquad \tfrac{13}{2} \text{ x } 5 = \tfrac{65}{2} \text{ or } 32\tfrac{1}{2}.$$

To find part of a fraction.

If children are taught to look upon the denominator, simply as a *name*, a great deal of trouble can be avoided.

The work here falls naturally into three steps.

(1) $\frac{1}{3}$ of $\frac{3}{4}$. Preparation: $\frac{1}{3}$ of $3? $\frac{1}{3}$ of 3 apples? etc.

$$\tfrac{1}{3} \text{ of } \tfrac{3}{4} = \tfrac{1}{4}$$

(2) $\frac{2}{3}$ of $\frac{3}{4}$.

Solution: $\frac{1}{3}$ of $\frac{3}{4} = \frac{1}{4}$.

$\frac{2}{3}$ of $\frac{3}{4} = 2 \text{ x } \frac{1}{4} = \frac{2}{4}$ or $\frac{1}{2}$.

(3) $\frac{1}{2}$ of $\frac{1}{3}$.

Change $\frac{1}{3}$ to $\frac{2}{6}$ (Here we are again making use of the "fractions in series" taught in 4A).

Then $\frac{1}{2}$ of $\frac{2}{6} = \frac{1}{6}$.

And now, for a few general remarks on methods of presentation, correction, etc.

Arithmetic treats of the relations between numbers and quantities. In each example, the numbers bear a certain relation to one another. If the child can reason out this relation, the danger of "wrong answers" is reduced to a minimum.

Wrong answers may be traced to two great causes:

(1). Faulty reasoning; (2) errors in computation.

It is a good plan to allow children to express the relations between the numbers in a given problem, before they work out the problem on paper. In this way, we develop the child's reasoning powers, and also exercise him in expressing his thoughts clearly.

When a new process in arithmetic has been developed, allow the children to give original problems; encourage them to ask questions of one another: require the class to work out the problems given by the children. This sort of work stimulates them to think clearly.

The relation of the new work in arithmetic to other known parts of the same subject, should always be clearly shown.

Errors in computation—the dangers of wrong answers due to faulty computation may be lessened by judicious work in mental arithmetic. Our aim here should be to insure accuracy and rapidity in dealing with numbers; and also to prepare the class for written work. It is better not to give *direct* aid to children, as far as the written work goes, rather suggest easy problems which will lead up to the more difficult ones in hand.

After a problem has been solved, require, at times, a statement of the work just done: here again is valuable work in language. In mental work, the problems should be varied, and practical, and deal with all the ordinary processes of arithmetic.

Emma Sylvester, *Class Teacher*, *P. S. No.* 23.

FIFTH YEAR—FIRST HALF.

Outline in arithmetic for Fifth Year, First Half.

I.—Simple numbers, integers, fractions, mixed numbers.

1.—Four rules, rapid addition, multiplication and division by 10, 100, 1,000 by moving the decimal point. Divisions of fractions, common and decimal; common fractions, decimal fractions and per cent. compared.

2.—Combination of two or more rules; cancellation.

3.—Three types of problems—

a. To find a part of a number, a fraction or a mixed number, apply aliquot parts of a dollar. *b.* To find what part one number is of another. *c.* To find the number, a part being given.

II.—Denominate Numbers.

1. Reduction to higher or lower denominations. 2. Addition and multiplication.

Business Applications.

I.—Industrial—

1. Actual measurements by denominate units; comparative judgments. 2. Measurement of surfaces and boxes by application of square and solid units.

II.—Commercial—

1. Bills and bills receipted. 2. Personal accounts.

Methods of Instruction.—The method of treatment is principally inductive and synthetic. Nearly all the work is presented in the concrete. Oral work precedes and accompanies written work. It generally consists of rapid, varied and irregular problems in the elements of arithmetic. Rapid calculation is an excellent lesson in concentration.

Lessons are reviewed daily. Every rule is demonstrated orally by a concrete problem, and pupils are thus led to see the nature of the work performed.

This leads up to the rule. The children are not required to learn the rule. When they have grasped the idea and meaning of the rule and can solve problems involving the same, it is quite unnecessary to learn a book-worded definition.

The children are encouraged to form new problems for themselves. This tests their knowledge of the work. A great number of small problems are given in preference to a few lengthy ones, and monotony is thereby as much as possible avoided.

With regard to the written work, carefully arranged books and papers are insisted upon to inculcate habits of neatness and accuracy.

Answers are not accepted unless absolutely correct.

Errors are indicated, and after the exercise has been thoroughly explained the incorrect work must be rectified.

The entire outline of work laid down for the grade is thus treated—combining rules, wherever possible, and endeavoring to make the work practical, leading on to habits of reasoning, exactness and accuracy.

A. M. Schultz, Class Teacher P. S. No. 20.

FIFTH YEAR—SECOND HALF.

The method of instruction and the plan of discovering and correcting errors in the pupils' work are as follows:—An example is given to be worked by all the members of the class. When the pupils have finished their work, a few are called on for results. I repeat one of these answers and call upon those having it to indicate the fact. This may or may not be the correct one, the point being to compel every member of the class to announce his answer and stand by his decision. A member of the class whose answer is correct is sent to the board to work out the example. All whose work varies from the demonstration are required to compare their work with that upon the board. In this way each member of the class discovers his errors.

When the demonstration is complete, I call upon those who have not discovered the mistakes in their solution of the problem to make known the fact, and individual attention is given to them.

The next step is to dictate an example or problem embodying the same principles in order to test the pupils' newly-acquired knowledge. If the results are satisfactory, the lesson moves on to a new problem.

One problem is all that is presented at a time, so that the pupils may concentrate all their attention upon a small field of view, and the recitation ends when a definite point in the arithmetical work is made clear. At the monthly reviews four or five examples may be given to be worked as an examination paper; but this method is never used during the instruction period.

In rating the examination papers, all correct solutions are left free of marks; those that are wrong are marked with a cross. Errors in the simple rules, however, are not considered as serious as errors in the process.

Marianne Brennan, Class Teacher, P. S. No. 20.

SIXTH YEAR—FIRST HALF.

The fourth type of problem is taken up for the first time in this grade. We follow a strictly inductive method. 1. We present easy examples in fractions and decimals of this type. 2. The solutions of these examples are placed on the board by the pupils under the guidance of the teacher. 3. Pupils are asked to observe and compare the steps by which the solutions are reached. 4. Then by means of questions the underlying principles for working these examples are established. 5. Problems of this type are dictated to the pupils who are required to solve them without the teacher's help.

Percentage is also begun in this grade. This topic is presented in the following order. Preliminary exercises are given to the pupils to develop the idea that *per cent* means *hundredths*, and therefore the fractions $\frac{3}{100}$, $\frac{5}{100}$, $\frac{7}{100}$, $\frac{9}{100}$ may be written .03, .05, .07, .09, or expressed by the figure and the sign % as follows:

3%, 5%, 7%, 9%.

Then the children are drilled to write per cent. expressions in the form of fractions or decimals. Now the pupils are ready to find the percentage. This they are taught to do by stating every problem in percentage in a fractional form, common or decimal, and then proceeding to solve it as they have been accustomed to do heretofore. Thus the first type-form is the apperceptive element for finding the percentage of any number.

In teaching what per cent. one number is of another, the pupils are led to see that these problems are really identical with the problems of the second type which they have learned in the previous grade.

The industrial applications are presented by means of concrete illustrations and the pupils are required to perform actual measurements of surfaces of objects within their immediate environment. For instance they are asked to estimate the length and width of the black-board, top of desk, door, book-case, etc., and then they are required to find the actual measurement, by means of the ruler.

SEVENTH YEAR—SECOND HALF.

The Course of Study for this grade prescribes rapid and short processes with integers, fractions and mixed numbers, percentage and proportion, the study of rectangles, parallelograms, triangles, circles, cubes and prisms with industrial applications; also, square root, with application of the same. Under "Commercial Arithmetic" is required a knowledge of percentage, interest, discount, exchange and all business forms in connection therewith.

The presentation of the matter to be taught was preceded by a thorough review of such work of other grades as led up to the subject studied, special attention being given to the relation of numbers. A thorough knowledge of common and decimal fractions and the principles of percentage was required in order that the pupils might be properly prepared to understand the business arithmetic of the grade. In trade discount and its effect the difference between a single discount and two successive discounts was carefully shown. In accurate interest the point to be impressed is that not only is the time exact as to the number of days, but also that the base of computation is 365 days and not 360 days, as in simple interest. In studying true discount, the pupils were made to clearly comprehend the relation which the present value, true discount and face of the debt bear to principal, interest and amount. The likeness of bank discount to simple interest with difference in mode and time of payment was carefully noted. In exchange, the filling out of printed drafts by the class, representing different pupils as factors in a business transaction, brought about a good understanding of the matter. In compound proportion a complete statement as to cause and effect was required in explanation of the ratios in the proportions. In all work relative to area, blackboard illustrations, geometric models and paper properly folded and cut were found to be valuable aids. When area is understood, cubic contents and the three dimensions are readily appreciated by the pupils. In square root and its applications the inductive method followed by the deductive was carefully observed. The first blackboard illustration used was an initial square to the two adjacent sides of which were added parallelograms with a corner square to complete the given square.

Arithmetic is a subject which cannot be correlated with other subjects of the grade, except language and mathematical geography. Questions are stated in clear aud concise language and the answers and explanations by the children must be given in exact and accurate terms. The written and oral work in arithmetic go hand in hand.

In indicating errors, if the method be correct, the entire work is crossed off; if the error be one in some simple rnle, a (x) cross over the mistake indicates where the error has been made. In the latter case the children correct their own errors. In the former, especially if the mistake be general, the problem is worked over upon the blackboard while each step in the work is thoroughly explained.

Sarah Breese, Class Teacher P. S. No. **53.**

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Prepared under the direction of

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